The relationship between exposure frequency and consumer affect

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door

Theo Bernard Charles Poiesz

geboren te Assen

promotor : Prof. dr. G. M. van Veldhoven
co-promotor: Prof. dr. J. B. Rijsman

Preface

As a student, several years before I even thought of writing a dissertation on frequency-affect relationships, I was requested by Prof. dr. Gery van Veldhoven to fulfill part of my educational requirements by submitting a paper on the significance of Zajonc's "mere exposure"-hypothesis for the study of consumer affect. From that moment on, my interest in exposure-affect relationships has not stopped growing, although I would be reluctant to describe this as an effect of mere exposure. The research-project that finally evolved out of it was an exciting experience, which, of course, is not necessarily the same as the continuous confirmation of successive hypotheses. I hope that this dissertation contributes to the understanding of frequency-affect relationships and that the reader may sense part of the excitement that I have experienced as a researcher.

Many persons contributed in many ways to the preparation of this dissertation. Unwritten conventions regarding prefaces allow me to briefly, that is conveniently, summarize the various contributions in about a single page. The reader should realize, however, that by its length - or rather lack of it - this preface cannot adequately describe the significance of these contributions.

Prof. dr. Gery M. van Veldhoven, promotor, and
Prof. dr. John B. Rijsman, co-promotor, had a way of teaching and guiding me that is best described as stimulating, in the fullest and broadest sense of the word. I want to thank them for their valuable critique, comments, and suggestions, and for the great experience that each discussion with them was.

I am also indebted to my colleages Prof.dr. Monroe Friedman (Eastern Michigan University), dr. Jasper von Grumbkow, drs. Rik Pieters, dr. Thijs Poppe, drs. Jef Syroit, dr. Norbert Vanbeselaere (Leuven University), and drs. Theo Verhallen, who contributed by either providing valuable information, by reading (sections of) drafts of the manuscript,

by giving suggestions, or by providing moral support.

When carrying out the experiments Ineke Grbic-Buddingh', Joep Claessens, Ruud Drabbe and Ad Rienks assisted me. Ineke Grbic played a special role: she assisted me also in the organization of the experiments and she typed a major part of the manuscript. She did a fine job, and this is an understatement. Ruud Drabbe was involved in the project from its beginning. I highly appreciate his interest and willingness to discuss exposure-matters with me, whatever the place and whatever the time. Jannie van Baardwijk-van Weelden put in a lot of effort typing sections of the manuscript. She voluntarily spent part of her leisure time to help me meet my schedule. Mia Smulders would not be willing to view her genuine interest throughout the project as a contribution, but it really was.

About 700 inhabitants of the Tilburg area participated in the experiments. For this, they donated their time, and were (often) prepared to ignore the weather.

I want to express my gratitude to all the persons mentioned above.

Finally, I want to thank Elly, Thijs and Marieke for everything I could not ask from them, but which they gave me anyway.

CONTENTS Page

1. EXPOSURE FREQUENCY AND CONSUMER BEHAVIOR; AN INTRODUCTION

1.1. Exposure to marketing stimuli

Being a consumer in a modern western society implies frequent exposure to marketing stimuli. Products and services are announced, promoted and re-promoted in the stores, in the shopping areas, on television and radio, in the print media, in person-to-person customer-salesman interactions, by direct and non-direct mail, and in a variety of other ways, including aerial advertisements, sign- and sandwich boards. Marketing stimuli vary greatly in the form of appearance; they range from simple, symbolic brand identifications on products and packages to elaborate persuasive commercial messages and free samples. As such, they differ with respect to the emphasis on direct consumer action.

If we conceive of marketing stimuli as any stimuli provided by marketing, containing product[1] related information and of exposure as the processing of stimuli, ranging from the pre-conscious encoding or preattentive processing at the one end of the depth of processing dimension to elaborate cognitive processing at the other (see Craik & Lockhart, 1972), the first sentence is rather euphemistically stated. In the combination of the two conceptualizations, exposure to marketing stimuli ranges from the automatic, pre-attentive, preconscious processing of, for example, a brand-symbol to the effortful cognitive analysis of, for example, a television commercial. Given the actual penetration of marketing stimuli in the consumer's environment, the quantity of daily exposures must be impressive.

Methodologically, it seems impossible to substantiate this conclusion by attempting to quantify the number of exposures. Yet, in the past, some attempts have been made. However, these

[1] In the interest of parsimony, the word 'product' will be used from here on as reflecting any good or service that can be purchased.

attempts were limited by their focus upon advertisements as only one of the many possible types of marketing stimuli (configurations) and by their conceptual approach to 'exposure'. For example, Ebel (1957) calculated the average number of exposures to be 1518 per day for the 'average' American consumer; Bauer and Greyser (1968) came to a more modest figure of 76 daily exposures, while Advertising Age (1970), distinguishing between sexes, reported that the average adult male in the United States was exposed every day to an average of 285 advertising messages and the average adult female to 305. Of course, these figures are tied to the (implicit) definitions of 'exposure' employed. For example, Ebel (1957) implicitly conceived of exposure as the opportunity to be exposed - which, from a behavioral viewpoint, should be distinguished from actual exposure; Bauer and Greyser (1968) viewed exposure as involving 'some direct indication of conscious action', thereby excluding the possibility of pre-attentive processes; Advertising Age, finally, included both noticed and unnoticed advertisements in the calculation of the number of exposures.
In spite of their conceptual problems, the reported figures are impressive. Still, whatever their conceptualization of exposure, they cannot serve as an estimate of the actual - amount of marketing stimuli processed by the (American[1]) consumer (at the time they were calculated[1]). Undoubtedly, this estimate would be even more impressive.

In conclusion: consumers are frequently exposed to marketing stimuli. However, also the reverse is often true: a multitude of marketing stimuli is frequently, in the sense of repeatedly, exposed to consumers.
In part, repeated exposure is a consequence of promotional efforts. For example, the repeated usage of the same brand-

[1] There is no need, at this point, to extrapolate to 1983 and to non-American consumers, assuming that, presently, all western consumers are exposed to a multitude of marketing stimuli each day.

name ensures correct identificaton; the repetition of the same advertisement often is more efficient, in terms of a marketer's goal, than each time a different one. Partly, repetition is a consequence of an individual consumer's behavior: by inquiring and communicating about, buying, storing, preparing, consuming, maintaining and disposing of products, a consumer is likely to repeatedly expose himself to the same marketing stimuli. Also the inevitable observation of other consumers inquiring and communication about, buying, storing, etc. may have a positive effect upon the exposure frequency of a particular marketing stimulus (its actual frequency held constant)[1].

In short, as the result of his own behavior, that of other consumers and the activities of marketers, redundancy is a prominent feature of an individual consumer's environment. Yet, as the result of the operation of the same determinants, marketing stimuli (are perceived to) vary considerably in their frequency of exposure. This raises the question whether frequency differences can be related to behavioral differences of consumers, within consumers over time and/or between consumers.

We may approach this question by focusing at possible behavioral differences in the stages or aspects of the consumer decision process that may, and often do, precede the act of purchase. Two stages seem to be particularly (however not exclusively) relevant in relation to exposure frequency differences: information (stimuli) processing including perception and awareness (or, more operationally, recognition and recall; and liking (affect). Questions about the first stage and about the order of and the relationship[2] between the two stages are not crucial in the present context and will not be addressed (except when necessary for the discussion of a mediating role). When discussing the possible effects of exposure

1 For an extensive discussion of the nature and types of exposure, the reader is referred to Hansen (1972).

2 In relation to some theoretical concepts it is sometimes hard to distinguish the two (e.g. exploration).

frequency, we will limit ourselves to main-effects only. Thus, we do not consider effects in relation to stimuli whose characteristics are likely to interact with exposure frequency. Examples of such stimuli are initially affectively positive or negative stimuli. Exposure effects of complex stimuli like persuasive messages, from which the pure repetition-effect is very hard or impossible to extract, will not be discussed here either.

1.2. Exposure frequency and consumer information processing

According to Sawyer (1974): 'One determinant of an individual's initial processing behavior is the number of times he is exposed to information relevant to the subject in question' (p. 190). The frequency with which a consumer is exposed to some marketing stimulus may be hypothesized to have a positive effect on the perception[1] and awareness[2] of that stimulus. Increasing the exposure frequency of a stimulus lowers the probability that the stimulus will remain unnoticed by the individual to whom it is exposed. For example, stimuli related to products with a large market share, a high market penetration, extensive in-store shelf space and/or repetitive promotional support will generally be more successful in reaching the level of (conscious) perception than those related to less frequently exposed stimuli. Research on the effects of repetition as related to consumer behavior has indicated that recognition[3] and recall[4], concepts related to perception and awareness, increase as a function of presentation frequency and

1 Perception is to be taken here as the outcome of a process whereby stimulus information is elaborated and interpreted so as to yield organization and meaning (Dember and Warm, 1979).
2 Awareness refers to the conscious perception of (a) stimulus/stimuli.
3 A stimulus is recognized if it matches with the internal representation of the same stimulus perceived earlier.
4 A stimulus is recalled if, by an active mental process, stimulus characteristics are retrieved from memory.

that memory performance improves less with an increasing number of exposures (see Sawyer, 1974). Extending this, we may assume that frequent exposure, relative to nonfrequent exposure, facilitates correct and prompt identification, categorization or encoding, storing, and, by consequence, probably also utilization of a stimulus in cognitive activities.

1.3. Exposure frequency and consumer affect[1]

The relationship between exposure frequency and liking[2] may be considered in each of the two possible directions: the effect of liking on exposure frequency on the one hand and the relationship in the reverse direction on the other. In the former direction there is a rather obvious causal relationship: to the extent that we may assume that people (consumers) approach or selectively expose themselves (see, for example, Sears and Freedman, 1967) to affectively positive stimuli, there is a positive relationship between affect and frequency of contact or exposure. The more a consumer likes a particular product, the more he will tend to cognize about it, see it and its symbolic representations in the marketplace and in the media, buy it, use it and possibly even watch other consumers consume it. As a consequence, he will expose himself more to the pertaining marketing stimuli.

There is evidence that the direction of causality may also be reversed, so that frequency of exposure has an effect upon consumer liking. In fact, a variety of frequency-affect relationships may be hypothesized, including positive, negative, linear and nonlinear relationships, based upon a variety of reasons.
Part of the available evidence is provided by learning theo-

1 Following Hill (1978), we will limit ourselves to dependent variables reflecting preference or hedonicity.
2 The words/terms: 'positive affect', 'liking', 'preference', and 'attitude enhancement' will be used interchangeable here, following the literature.

rists employing paradigms in which two stimuli are paired (repetitively). For a review, the reader is referred to Hill (1978). By temporal and spatial contiguity of the stimuli, a stimulus that initially does not have the behavioral effect of the other stimulus does acquire that same effect after a number of repetitions. Classical conditioning, secondary reinforcement and learned drive are theoretical concepts attached to learning theory paradigms. However, as these involve the interaction of repetition and stimulus characteristics (positively and negatively reinforcing), they will not be treated here.

According to the popular sayings: 'Familiarity breeds contempt' and 'Absence makes the heart grow fonder', frequent exposure leads to nonpositive affect, or, conversely, nonfrequent exposure leads to positive affect. That is, if we may take frequent exposure as synonymous for familiarity and absence as synonymous for nonfrequent exposure.
Even though we can think of many instances in which the two sayings apply (for example, in the consumer sphere, products often seem to derive their attractiveness from initial unfamiliarity - fashion), their applicability is limited in that their reverse is not necessarily false. This suggests that the relationship between exposure frequency and affect is not as simple as these sayings want us to believe.
Real life evidence suggests that also unfamiliarity may breed contempt and that also presence (or exposure, at some frequency) is capable of making hearts growing fonder. (That there is a popular saying for this latter effect as well - 'Unknown, unloved' - indicates that, at least with regard to frequency-affect relationships, the predictive value of such sayings is limited). Consumers often seem to prefer some stability/familiarity, as is reflected in store and brand loyalty (which is not to say that loyalty is always due to a preference for the familiar).

Advertising research is not very helpful in providing an in-

sight into frequency-affect relationships. First, this research deals with advertisements, which seem inadequate stimuli in the study of the effect of frequency per se; Second, as Belch (1982) reports: 'most research into the effects of advertising repetition has focused primarily on outcome measures such as recall, attitude, and purchase intention, rather than considering the underlying processes that might shape and determine reaction to an advertising message following multiple exposures'. (p. 56).

For the various possible relationships, there are a variety of conceivable explanations which are linked to major psychological theories. If we restrict ourselves to linear relationships, some examples of these explanations might be the following:

For the positive relationships, with increasing exposure frequencies:

- Learning theory suggests the possibility that consumers become aware of previously not detected positive product-attributes, which renders the product more attractive (experience formation, e.g. Hansen, 1972, pp. 179-180);
- Attribution theory (e.g. Kelley and Michela, 1980) would predict that consumers rate product or brand quality higher as the result of some attribution-process in which exposure frequency is taken as:
  - an indicator of market share, which, in its turn, is interpreted as a sign of the high quality.
  - a sign of the degree to which the marketer 'beliefs' in the utility of his product for the consumer.
  - an indicator of a consumer's own liking for the product ('since I frequently come into contact with it, it must coincide with my interests');
- Consumers get the impression that the frequent purchase and consumption of the product by other consumers reflect socially desirable behavior. As a result, they (should)

like it more (reference group theory, e.g. Stafford & Cocanougher,1977).

It is clear that some of these possible effects may be reversed (referring to the same theories). For example, for negative relationships, with increasing exposure frequencies;

- consumers may become aware of previously not detected negative product-attributes, which renders the product less attractive;
- consumers may lose interest (arousal theory, Berlyne, 1960) and may even grow irritated. (For example, consumers may consider the repeated presentation of a particular tv-commercial a waste of their time and money, thus resulting in negative affect toward the brand);
- consumers consider the concerning product or brand less 'exclusive', resulting in less positive evaluations by those consumers wishing to belong to the 'happy few'.

Actually, many more of such possible explanations may be thought of, each referring to a particular effect of consumer-, object-, or situational characteristics. However, the point to be made is that, due to this specificity, neither explanation can be expected to make a major contribution to the understanding of frequency-affect relationship differences.

This assertion is contradictory, however, with the claim that is inherent in Zajonc's (1968) 'mere exposure'-hypothesis. According to this hypothesis, the mere exposure of a stimulus unconditionally renders this stimulus more attractive: mere repeated exposure of an individual to a stimulus object enhances his attitude toward it. By 'mere exposure' is meant: 'a condition which just makes the stimulus accessible to the individual's perception' (Zajonc, 1968). Considering the conclusion of an earlier section that, each day, individual consumers are exposed to a multitude of marketing stimuli, this hypothesis is potentially highly important. Therefore, we will focus upon it in the next section.

1.4. The mere exposure hypothesis

At its introduction, the mere exposure hypothesis was supported by two general types of evidence: correlational and experimental. The correlational evidence presented by Zajonc (1968) indicated positive associations between word frequency (in a particular language) and word value and between the frequency of words and the attitude toward their referents. The experimental evidence referred to by Zajonc (1968) is obtained in laboratory situations in which, usually, various initially unfamiliar stimuli are shown to subjects on slides or cards, or are exposed through a tape-recorder (sounds) at different frequencies, per subject one stimulus for each frequency-level and per experimental group (cell) stimuli counterbalanced over the different frequency-levels. At the start of an experimental session, subjects typically are not informed about the true objective of the study and often do not receive any (subject-) role-relevant information.
The experimental evidence presented by Zajonc (1968) is of two types. The dependent variable is either the attitude with regard to the concerning object(s) or the affective connotation of nonsense words and symbols. In the experiments, a variety of stimuli was employed, one type of stimulus per experiment. These stimuli included nonsense words, 'Turkish adjectives', Chinese characters, portraits, musical selections, visual and auditory patterns, and products.

The evidence reported by Zajonc generally supported the mere exposure hypothesis, except if the stimuli used were words selected from everyday English language. However, this finding is not necessarily in conflict with the hypothesis. According to Zajonc (1968), no effect should be expected if the number of experimental exposures is negligeable in relation to the number of previous exposures outside the laboratory. Thus, the size of the exposure effect is negatively related to the a priori familiarity of the experimentally exposed object. The more familiar an object is, the larger the number of additio-

nal exposures should be before some attitudinal effect can be obtained: 'attitude enhancement is a function of the logarithm of frequency' (Zajonc, 1968).

Although the reported experimental results confirmed the mere exposure hypothesis, Zajonc (1968) concluded that 'boundary conditions are still to be examined for it is possible that the neat linear log frequency-affect relationship (...) may well break down under some conditions'.
This conclusion, in combination with the observation that the hypothesis is of high potential relevance for consumer behavior, warrants a closer look at its validity. More specifically, the following questions will be addressed here:

- What is 'mere exposure' as implied by the hypothesis ?
- Does mere exposure lead to attitude enhancement ? And, if so, why (conversely, if not, why not ?). Or, if it does in some, but not in other cases, when does it (not) and why (not) ?

1.4.1. What is 'mere exposure' as implied by the hypothesis ?

The term 'mere exposure' is ambiguous. It is not clear how it should be interpreted. Strictly speaking, exposure is either 'exposure of' or 'exposure to' (following 'exposure of'). The first alternative seems meaningless for behavior, however, as long as it does not combine with the second. Disregarding any effects on an exposing person, it seems impossible to conceive of direct behavioral effects of 'exposure of' alone. So far for the name of the hypothesis.
Zajonc (1968) describes mere exposure as 'a condition which just makes the given stimulus accessible to the individual's perception'.
We note two things. First, the description does not read 'a condition which renders the stimulus perceived', which implicitly suggests that accessibility to perception is more

crucial than perception itself; 'opportunity to be exposed to' rather than 'exposure to' is the sufficient condition for attitude enhancement to take place. Second, Zajonc stresses the condition rather than the stimulus in his description, without indicating why, however.
With regard to the first comment we will assume that Zajonc did mean 'exposure to following the opportunity to be exposed to'. On the basis of information provided in connection with his hypothesis we are not allowed, however, to make assumptions regarding the level and extent of information processing necessary for attitude enhancement to take place. With regard to the second comment, no assumptions can be made. In conclusion, the mere exposure hypothesis contains some ambiguous elements. Yet, taking the mere exposure hypothesis in its most obvious meaning, we must conclude also that it covers many instances in which consumers are exposed to marketing stimuli. Basically, the requirements made by the hypothesis coincide with the conceptualization of 'exposure to marketing stimuli' presented earlier, which underlines the hypothesis' potential relevance for consumer behavior.

1.4.2. Does mere exposure lead to attitude enhancement ? And why (not) ?

Previously, we conceived of marketing stimuli as any stimuli provided by marketing, containing product-related information. Is it so that the mere exposure hypothesis applies to all these stimuli unconditionally, favoring the most frequent ones in terms of their effect upon consumer affect ?
Sawyer (1974) notes: 'This research (on the effects of repeated exposure on liking - note by the present author) has generally found positive effects of repetition, although in one study (Verveer, Barry and Bousfield, 1973), increases in affect were followed by decreases over four exposures. Krugman and Hartley (1969) found that, although five weekly repetitions of different types of paintings resulted in increased

rated familiarity of the categories, the increased familiarity did not necessarily result in increased liking'. According to Grush (1976): 'Recent investigations report data that seem to conflict with (...) the mere exposure hypothesis (...)'. Some studies (Brickman, Redfield, Harrison and Crandall, 1972; Perlman and Oskamp, 1971) show that exposure can lead to more negative as well as more positive stimulus evaluations (...). In summary, the mere exposure literature is replete with inconsistencies'. Harrison (1977) notes: 'A good deal of research in the last 10 years has demonstrated that repeated exposure to some stimulus leads to liking for it under a wide range of conditions (...). Many hypotheses suggesting qualifications and exceptions to the mere exposure effect have been found to be invalid'. On the other hand, 'some studies have yielded mere exposure effects, but others have not. Exposure frequency itself cannot account for this pattern of findings, for inconsistencies exist among studies which have manipulated frequency with identical ranges'. (Harrison, 1977). Vanbeselaere (in press), after discussing the available evidence, concludes that: 'Although the mere exposure phenomenon thus clearly seems to have implications for a wide range of important phenomena, the main problem is however that the exposure phenomenon remains a phenomenon in search for an explanation'.

In the next chapter, we will make an attempt to search for an explanation. Before doing so, it is necessary to stress that the mere exposure hypothesis does not deal particularly with consumer behavior. Redundancy being a peculiarity of the human environment, the hypothesis describes a general behavioral tendency. Since, with respect to frequency-affect relationships, there is little reason to presume a fundamental difference between consumer behavior and behavior in general (which comprises consumer behavior), we may take the hypothesis as applying to consumer behavior as well.
Most research on the hypothesized relationship followed the general nature of the hypothesis: it focused on behavior in

general without special reference to consumer behavior (except in some rare cases). For an adequate discussion of the hypothesis it seems efficient, therefore, to step outside of the domain of consumer behavior as a particular behavioral domain. Then, after gaining an insight into the hypothesis' significance for human behavior in general, we will return to the issue of consumer behavior in relation to exposure frequency.

2. IN SEARCH FOR AN EXPLANATION

This chapter consists of three parts. In the first part we will look at a major hypothesis, well supported by empirical evidence, that is in contradiction with the mere exposure hypothesis: a novel stimulus will be preferred to a familiar stimulus (e.g. Berlyne, 1960). In the second part an overview will be given of the (major) hypotheses that have been proposed for the explanation of exposure effects. Finally, in the third part, we will make an attempt to contribute to the search for an explanation, taking into account, among other things, the contents of the first two parts.

2.1. Preference for the familiar or the unfamiliar ?

Berlyne (1960) and others assume, and have found evidence supporting that, in a free choice situation, novel rather than familiar stimuli will be approached by a human or animal subject. Basically, approach behavior may be preceded by either a favorable attitude (in the case of humans) or by uncertainty and conflict. In the first case, the subject approaches the stimulus in order to obtain positive reinforcement; in the second case, the stimulus is approached in an attempt to reduce uncertainty and, thereby, to reduce or avoid (the possibility of) negative reinforcement. According to Zajonc (1968), approach behavior should be interpreted in the latter sense: 'It is more likely that orienting toward a novel stimulus in preference to a familiar one may indicate that it is less liked rather than it is better liked' (Zajonc, 1968, p. 21). In this view, exploration of and curiosity for novel stimuli are in accordance with the mere exposure hypothesis. Zajonc refers to Harrison (1967), who found that exploration and favorability of attitude are negatively related. However, there are two reasons for not adopting Zajonc's interpretation unconditionally. The first reason is that Zajonc seems to ignore the many instances in which novel stimuli are not

necessarily associated with conflict and uncertainty as negatively evaluated psychological states. Both empirical evidence (see, for example, Berlyne, 1971) and real life observations suggest that, contrarily, novelty may be a positively evaluated stimulus attribute, and that this even may be the case if novelty is in fact associated with conflict and uncertainty. For example, many recreational activities involve some degree of conflict or uncertainty. Yet, they are pursued by many, also when they are novel. The industrial revolution might never have taken place if innovations, or novel facilities, machinery and products should be viewed as basically disliked.
The second reason for not adopting Zajonc's viewpoint on the function of exploration and the evaluation of novelty is that Harrison's (1967) findings, referred to by Zajonc as providing support for his argument, do not necessarily provide this support. Let us consider this briefly.
Harrison (1967) showed (novel) nonsense words, Chinese characters, and photographs of men's faces to subjects in an experimental setting and then obtained measures of exploration and liking (in two different groups of subjects, one measure per group). Following exposure, Harrison found negative correlations for all three types of stimuli between exploration and liking. However, this does not necessarily mean that novelty is negatively related to affect: both Harrison and Zajonc seem to ignore one of two possible theoretical propositions concerning novelty, exploration and affect.The first one is implicitly employed by Harrison and Zajonc: if a stimulus is novel, exploration is related to affect. And the second one is: if a stimulus is explored, novelty is related to affect.
In the former proposition exploration takes place as the inevitable byproduct of stimulus novelty. In the latter, exploration is conditional. Assuming that we do <u>not</u> explore all new stimuli that impinge upon us in our daily environment (for example, all new products, advertisments and commercials, all the 'nonsense' words and (brand)names we are unable to attach meaning to, all the unfamiliar signs, symbols and characters that we do not understand, all new faces in the street and in

the media, etc.), it seems justified to prefer the latter proposition to the first. Then, if exploration should be taken as conditional, it does not seem theoretically valid to measure exploration in a forced exposure experiment in which exposure is unconditional. It is not unlikely that this seriously biased Harrison's findings. As a consequence, it is not possible to refer to them as an indication of the more general relationship between novelty and affect. In other words, the exploration of novel stimuli may still be motivated by a tendency to obtain positive reinforcement; novelty may still be positively related to affect - which contradicts the mere exposure hypothesis.

In conclusion, exploratory behavior and curiosity do pose a serious problem for Zajonc's (1968) hypothesis. Later, when an attempt is made to integrate the various findings on frequency-affect relationships in order to find a more general explanation, we will return to this issue.

2.2. Explanations of the mere exposure phenomenon

Here, we will briefly discuss the interpretations that received most of the attention in the literature. No attempt is made to integrate them, nor to differentiate them. For each of the hypotheses supporting empirical evidence has been found, but none of them was unequivocally supported. The most appropriate place to consider the empirical evidence will be the next section, 2.3., in which it is attempted to integrate theory and findings.
In the overview, summaries will be presented of the following interpretations: response competition, arousal, positive habituation/tedium (the two-factor interpretation), semantic satiation and generation, expectancy arousal and the interpretations of mere exposure as an artifact and as a case of contact-conditioning. For a more extensive review the reader is referred to Harrison (1977). His review served, in part, as

a basis for the overview given here.

Response competition (Harrison, 1968; Matlin, 1970)

According to the response competition interpretation, drawing from Berlyne's (1954) theory on novelty and conflict, all stimuli (including novel ones) will, upon exposure, elicit different, sometimes antagonistic, simultaneous responses. This results in an aversive state, referred to as 'response competition'. Repeated exposure of a stimulus will strengthen some responses and attenuate (incompatible) other ones, thus reducing response competition and the associated negative affect. As response competition is negatively related to exposure frequency, and response competition is negatively related to affect, frequency of exposure is positively related to affect.

Arousal (Berlyne, 1960, etc., and others)

A number of theorists propose activation or arousal as an explanatory factor for positive frequency-affect relationships. However, their approaches disagree as to what processes account for exposure effects. About four different lines of reasoning can be distinguished.

- According to Berlyne (1960, 1971) stimuli with a high and a low capacity to increase arousal (excitatory potential) will be associated with less positive affect than stimuli with a moderate excitatory potential. The excitatory potential of a stimulus is dependent upon, among other (including physical) properties, its collative properties. Novelty is an example of such a property, that can be assessed only by simultaneously taking into account, or collating, information from two or more sources. For example, a stimulus' degree of novelty, complexity, surprisingness, ambiguity, etc. is not determined on the basis of its physical properties alone. The novelty of a stimulus

implies a high excitatory potential. By repeated exposure, novelty and the concomitant excitatory potential decrease and so reduces the latter to a more moderate and therefore more positively evaluated level.

- A somewhat different perspective is taken by McClelland et al. (1953) and Haber (1958), who propose an adaptation level interpretation. Stimuli with an excitatory potential that cannot bring about a change in the adaptation level (established by past and current stimulation) are affectively neutral. Stimuli whose excitatory potential deviates from the current adaptation level will elicit either favorable or unfavorable reactions, depending upon the size of the discrepancy. A small discrepancy above or below the adaptation level will be positively evaluated; a large discrepancy negatively. Repeated exposure of a stimulus will reduce its excitatory potential. If it is reduced from highly to moderately discrepant (from the adaptation level), the stimulus will elicit more favorable reactions. A reduction, by repeated exposure, of the excitatory potential to the current adaptation level will result in feelings of indifference.
- By Olds (1962) and Berlyne (1967) still another position is taken with regard to the processes through which a stimulus' excitatory potential influences affect. A stimulus with a moderate excitatory potential activates a primary reward system, resulting in favorable reactions with regard to the stimulus. An aversion system is activated by stimuli with a high excitatory potential. When 'in operation', this latter system inhibits the primary reward system. A third system, the secondary reward system, is activated by a decrease in arousal: a stimulus that loses, by repeated exposure, some of its high capacity to increase arousal, will be associated with positive affect. Continued exposure, however, may result in an arousal potential that is too low to activate the primary reward system.
- Finally, Hebb (1946) and Bronson (1968) argue that a novel stimulus disrupts perceptual patterns that have been formed

by visual experience, thus producing negative affect. Repeated exposure makes this stimulus part of a perceptual pattern and thereby reduces the negative affect.

Two-factor theories (Berlyne, 1970; Stang, 1973, etc.)

Berlyne (1970) proposed two factors for the explanation of exposure effects. In principle, the two factors operate simultaneously, but their relative influence will differ, depending upon stimulus familiarity. The first factor, positive habituation or the reduction of uncertainty and conflict, will be more dominant when the number of exposures is relatively small, while at a relatively larger number of exposures, the second factor, tedium, will become more dominant. Positive habituation is associated with positive affect and tedium with negative affect. As a result, this theory and other two-factor theories depart from an inverted U-relationship between exposure frequency and liking. The relative strength of the two factors at some point in the course of exposures is influenced by a variety of variables that can be assumed to affect arousal. One example of these variables is stimulus complexity: for a complex stimulus, the 'break-even point' of positive habituation and tedium will be located later in the course of exposures than for a simple stimulus.
Stang (1973, etc.) modified this notion by positing learning and satiation as the two factors producing an inverted-U relationship between frequency and liking. With respect to learning - the development of meaning by new associations - he departs from the tendency, described by the Pollyana hypothesis (Boucher and Osgood, 1969) to prefer positive associations to negative ones.

Semantic satiation and generation (Grush, 1976; Jacobovits, 1968)

There is a common element in the semantic satiation and

generation interpretations on the one hand and the previously described two-factor theory proposed by Stang (1973) on the other. All three predict that the meaning of a stimulus changes with repeated exposures.
The semantic satiation hypothesis suggests that the repetition of exposure leads to a loss of meaning. If, at its first exposure, a stimulus has a negative meaning, this meaning will become less negative with subsequent exposures. Conversely, repeated exposures will render an initially positive stimulus less positive. On the other hand, the semantic generation interpretation predicts just the opposite effect to occur: the repetition of exposures is accompanied by a polarization of meaning, both for initially positive and negative stimuli: with repeated exposures, negative stimuli become more negative and positive stimuli more positive.

Expectancy arousal (Crandall, 1967, etc.)

The frequency of exposure affects expectancies with regard to the exposed stimulus. Stimuli that are associated with moderate expectancies are preferred over stimuli with weak or strong expectancies. As a result, the expectancy arousal interpretation predicts, just like some of the other interpretations, an inverted-U relationship between exposure frequency and liking.

Mere exposure as experimental artifact[1] (Stang, 1974a and others)

Several authors have questioned the validity of positive frequency-affect relationships by interpreting them as being the result of demand characteristics (Burgess and Sales, 1971), subjects' favorable or unfavorable set towards the stimuli (Suedfeld et al., 1971) or subjects' intuitive hypotheses (Stang, 1974a).

[1] 'Artifact explanations cannot account for the mere exposure data' (Harrison, 1977, p. 63, reviewing the evidence).

Mere exposure as a case of contact-conditioning (Nuttin, 1980)

Nuttin (1980) views mere exposure effects as a special case or example of (the effects of) contact-conditioning. It is through contact-conditioning that affective behavior changes relatively permanently as the result of repeated presentation of the stimulus to the organism. Nuttin argues that contact-conditioning, rather than the conditioning of reflexes is the most 'primitive' form of conditioning. He considers contact-conditioning by the mere repeated contact with a stimulus impinging upon him, as a fundamentally important launching-base from which various complex forms of classical and instrumental conditioning become possible.

2.3. Proposing an alternative, more general hypothesis

As indicated earlier, none of these hypotheses have received unequivocal support. In some cases, exposure frequency was found to be positively related to affect, in other cases negatively and yet in other cases, there was no effect of mere exposure whatsoever. Additionally, often nonlinear relationships were observed.
In short, none of the available hypotheses seems capable of consistently explaining effects of exposure frequency. Yet, they have been supported by empirical evidence that can not be simply ignored. Therefore, we will proceed here by combining the existing theory and research evidence with speculation, in an attempt to find an explanation that seems capable of providing some reconciliation. First, we will turn to a reinterpretation of the available evidence.

Potentially helpful information is provided by Stang (1974b), who analyzed more than one hundred experiments on exposure-affect relationships and found three factors, or experimental characteristics, to be of significance for the (non)-occur-

rence of positive relationships. These three factors are:

1. The type of stimulus exposed in the experiment. A positive frequency-affect relationship is more likely with paralogs, ideographs and portraits than with abstract auditory or visual patterns.
2. The time-interval between exposure and affect-rating. The likelihood of a positive relationship increases with the size of the interval.
3. The type of exposure-sequence: massed exposure with a stimulus being exposed uninterruptedly until the frequency-level is reached (for example, if A, B and C are stimuli: A-A-A-A-B-B-B-C-C) versus distributed exposure with stimuli from different exposure frequency levels intermixed (for example: A-B-A-C-B-A-C-A-B). Positive frequency-affect relationships have been observed more often in connection with distributed exposure.

Stang pointed at a possible confounding of this latter factor with factor 2, however.

Considering the large number of studies that Stang's (1974b) analysis focused at, it seems worthwhile to explore the possibility that some more general interpretation of (no) positive frequency-affect relationships could be derived from his first two factors. Then, an obvious question is: what do (the levels of) these factors mean for the subjects in the experimental situation? Since Zajonc (1968) described mere exposure as 'a condition which just makes the stimulus accessible to the individual's perception', thus placing an emphasis on the prerequisites of the phenomenon, let us consider the nature of the condition(s) under which subjects participated in the experiments that Stang used for his analysis.

It turns out that a large majority of these experiments has one particular procedural characteristic in common: the subjects receive no pre-exposure information with regard to the nature of the experiment nor with regard to their expected role or performance therein. Given the nature of Stang's (1974) two/three factors, this may be of considerable importance.

Take, for example, the as we may call it 'classical' mere exposure experiment in which some unusual stimuli, let us say paralogs, are presented on slides and at various frequencies: subjects are students and the experimenter is the Psychology professor. At the start of the experimental procedure, the subject enters the experimental room, wondering what will be requested of him, and possibly also wondering how he will feel when leaving again: confused, 'psyched out', satisfied, embarrassed (etc.). (Often, participation is a partial fulfilment of educational requirements, so that also persons participate who would not do so voluntarily). He is greeted by the experimenter, who, instead of explaining to him what he has to do or telling him about the research objective, simply asks him to be seated in front of a screen, announces a slide presentation which is to be watched carefully, starts the projector and remains silent. It is likely that, before the first slide comes on, the subject is wondering whether he should not know more at this point, and may even expect the desired information to appear on the first slide. Then, the first slide comes on: 'AFWORBU'. It is exposed for a few seconds only, followed by a short time-interval in which no slide appears. Then, the second slide is presented: 'IKTITAF', time-interval, the third: 'DILIKLI', time-interval, the fourth: 'AFWORBU', etcetera. It is not hard to imagine that the subject is likely to be at least somewhat uncertain or confused: what do these words (?) mean ? How are they pronounced ? Why do I see some of them more often than others ? How long is this going to continue ? Have I seen that one before ? In short: what does the professor want of me ?

A task-orientation develops, in which the stimuli themselves serve as a source of task-relevant information. It is assumed here that the subject infers from their nature an impression of the nature of the task, including its difficulty, and that, consecutively, frequency differences start playing a role. For a task-oriented subject, expecting a difficult task, frequent stimuli are likely to be more reassuring in such a situation than infrequent stimuli. Although his questions actually

remain unanswered, the subject's confidence is raised / his uncertainty is reduced by the more frequently exposed stimuli, as these are the ones that he will be able to recognize or recall. And this, undoubtedly, is helpful in whatever the task will be.
It is assumed here that the presentation of a series of paralogs or ideographs (as opposed to modern paintings or abstract visual or auditory patterns) raises the subject's expectation that some 'performance-task' is ahead - a task in which his performance is evaluated explicitly or implicitly by the experimenter or by other subjects on a good-bad dimension and in which he is to try to obtain a good performance score. (In the few reported experiments in which an instruction is given prior to exposure, this introduction refers to either a learning- or a memory-task - 'performance'-tasks as well).
Alternatively, the presentation of modern paintings or abstract visual or auditory patterns is more likely than the exposure of paralogs and ideographs to suggest a task in which the subject is to rate stimuli on an aesthetic good-bad, or like-dislike dimension. As taste is something personal and as personal differences in aesthetic values are (socially) acceptable, the subject will feel that the stimuli are the objects of evaluation rather than he himself. He expects, what we may call, a 'nonperformance'-task, rather than a 'performance'-task.

Although the use of pictures of people's faces as stimuli was found by Stang (1974b) to be positively related to the occurrence of positive frequency-affect relationships, it is, at this point, not as clear as with paralogs and ideographs, why that might be.

The other factor indicated by Stang (1974b), the time-interval between exposure and affect-rating, could also be interpreted as related to the subject's confusion or uncertainty. During a long time-interval between the exposure- and the rating-(resp. the expected task-) phase, the subject knows or experi-

ences that his memory for the stimuli is declining over time, which may either cause or increase inconfidence or uncertainty[1]. In addition, a long delay after the presentation of the stimuli may also serve to confirm a subject's expectation of a 'performance'-(memory- ?) task.

According to Back et al. (1967), an experimental subject approaches the experimental situation at two levels: 'at one level, he takes the situation at face value, listens to the instructions, performs according to them, and reacts to the properly introduced experimental variables. From another point of view, however, he seems to approach the situation as a whole. He wonders what it is about, he wants to help the experimenter and feels apprehension in this novel and essentially ambiguous situation. This double performance of the subject has been recognized for a long time by students of the experiment and this recognition forms the basis of much of the critisisms of the social-psychological experiment (Mills, 1962; Orne, 1962) (...). Experimental stress has its source in the discomforts inherent in the experiment: the newness and ambiguity of the situation or the uncomfortable experience of being observed'. Back et al. (1967) found that general arousal, as measured by changes in the level of plasma-free fatty acids, was high in both the task and the 'in-between times' or times when there is no scheduled activity - the waiting periods when one task (observing a series of stimuli) is completed and the subjects wait for another task. Back and his colleagues interpret this as experimental stress, affected by the intrinsic variables of the experimental situation.

[1] At first sight, it seems equally possible to present an explanation as to the opposite effect - uncertainty decreasing with increasing time-interval. However, considering the nature of the experimental procedure, we may assume that subjects interpret the experiment as a sequence of purposeful manipulations, in which the time-interval has its own function. Then, it is very unlikely that the time-interval attenuates uncertainty.

Even if Stang's (1974b) third factor, type of exposure sequence, would be unconfounded with rating delay, it would seem possible to apply the interpretation given with respect to the other two factors. It may be assumed that a subject is more confused or uncertain by distributed (as compared to massed) exposure, in which it is harder to memorize stimuli and in which the type of sequence itself seems to indicate that the task ahead may be rather difficult. Furthermore, in the massed exposure sequence, the subject does not have to wonder about sequence rules. Even though Stang (1974b) was reluctant to propose type of sequence as an independent factor, we should note that Harrison and Crandall (1972) did find that in their high-homogeneous condition (each stimulus following itself until the required number is presented), the attitude enhancing effects of exposure (as found in the high-heterogeneous condition, no stimulus following itself) were severely attenuated. In their study, stimuli were rated immediately after exposure.

Summarizing, the two or three factors indicated by Stang's (1974b) analysis are interpreted here in terms of the degree to which they arouse feelings of uncertainty or confusion on the part of the experimental subject. It was assumed that a subject expects a performance-task when he is confronted with a combination of a lack of pre-exposure instructions and the exposure of a series of ideographs, paralogs, or similar stimuli. In the anticipated task he expects his performance to range anywhere from bad to excellent in terms of recognizing, learning, or memorizing something. In such a task, familiarity of what is interpreted as task-relevant material is considered by him to be helpful, useful or instrumental later in his attempt to reach the desired (high or satisfactory) level of performance.
That is, if we may assume (with Back et al., 1967) that subjects are motivated to do well. By repeated exposure of a stimulus, part of the task-related uncertainty is reduced. Whatever the task will demand of him, the subject feels more

confident/less uncertain with regard to successful performance with increasing familiarity of the concerning task-stimuli. Familiarity, then, is taken by the subject as instrumental for performing well at the task. As a consequence, familiarity is positively related to affect. Instrumentality of stimulus-familiarity is defined here as the extent to which a subject expects familiarity to be related to successful task completion. Instrumentality refers directly to task outcome.

However, familiarity may also operate in a different way: even if familiarity does not give the subject the expectation of being successful at the task, it may relieve the experimental stress (resulting from uncertainty or confusion). For example, a subject, intolerant of ambiguity, is likely to prefer familiar (relatively unambiguous) stimuli to unfamiliar (relatively ambiguous) stimuli in the basically ambiguous experimental situation (see Back et al., 1967). If familiarity leads to the reduction of experimental stress for some other than task outcome related reason, familiarity would be more adequately described as functional, rather than instrumental.
Functionality of familiarity is defined as the extent to which a subject perceives familiarity as making it possible for him to acquire or maintain a preferred psychological state or to avoid or reduce a nonpreferred state, i.e. uncertainty. Then, the central hypothesis is that functionally familiar stimuli are affectively positive as compared to unfamiliar or less (functionally) familiar stimuli.

We must note that functionality is a more general term than instrumentality. Instrumental familiarity is, by definition, also functional, but functional familiarity does not necessarily have to be instrumental (helpful in achieving successful task completion). Instrumental familiarity is more limited in that it relates to a particular task outcome, while functional familiarity relates to the broader notion of psychological state.
Up to this point, the assessment of functionality as an ex-

planatory concept regarding frequency-affect relationships has been treated as a higher order cognitive activity or process, such as goal-directed thinking and reasoning, taking place at the conscious level. Findings suggesting that no conscious cognitive activities are necessary for the occurrence of positive frequency-affect relationships, such as those obtained by Moreland and Zajonc (1977) and Wilson (1979), implicitly seem to question the validity of the functional exposure explanation (simultaneously favoring the mere exposure interpretation).

Moreland and Zajonc (1977) asked subjects in their study to rate the subjective familiarity with and liking for each of the (more or less frequently) exposed stimuli. When partialling out rated familiarity, the authors still found a significant partial correlation between exposure frequency and liking, which led them to conclude that there is an effect of exposure frequency that is not mediated by stimulus recognition. This suggests that no higher order cognitive activities are necessary for frequency effects. Birnbaum and Mellers (1979) questioned Moreland and Zajonc's (1977) conclusions, however. Yet, also Wilson (W.R.) (1979) found attitudinal enhancement toward stimuli that, in a dichotic listening procedure, were exposed to the unattended channel, which equally contradicts the operation of higher order processes.

However, on the basis of two types of evidence we should not preclude the possibility that the functional exposure interpretation applies to the outcomes of these studies as well:

1. evidence suggesting that the assessment of frequency may be an automatic process (no awareness of the operation of the process, no intention and little effort, see Posner and Snyder, 1975);
2. evidence suggesting that the assessment of functionality may be an automatic process.

ad. 1. Hasher and Chromiak (1977) concluded that frequency tagging appears to be an automatic aspect of the processing of information. According to these authors, 'the processing of

frequency may fall in the domain of what Posner and Snyder (1975) have called 'automatic processes' (...), in the sense that tagging of frequency has little impact on one's ability to simultaneously attend to other aspects of the situation (...)' (p. 173). In addition, Kellogg (1980) concluded, on the basis of a number of experiments, that individuals can recognize unattended stimuli.

ad. 2. Nisbett and Wilson (T.D.) (1977) concluded that 'some stimuli may affect ongoing mental processes, including higher order processes of evaluation, judgment, and the initiation of behavior, without being registered in short-term memory, or at any rate without being transferred to long-term memory' (p. 240). Here, we may refer to the perceptual defense literature: 'In the case of taboo items, some kind of defensive selectivity operates to bias the processing of emotionally charged input - such selectivity having its impact prior to a conscious recognition of the input' (Moore, 1982, p. 40). More specifically, Kolers (1957), for example, found that cues to the solution of problems (or, freely translated, instrumental or functional cues), were capable of influencing the kind and number of solutions given by subjects, even though subjects were unaware of them. [Studies with similar findings are reported by Hansen (1972, pp. 118-120)].

On the basis of these two types of evidence we should allow for the possibility that functional exposure may be the result of both higher order and lower order cognitive activities and processes[1], and, consequently, that the findings by Moreland and Zajonc (1977) and Wilson (1979) are not necessarily in conflict with the functional exposure hypothesis.

[1] Lower order activities and processes are best described as 'preconscious', which is: 'the term used by Freud to designate those 'wishes' or 'impulses' that the person is unaware of at the time he takes action, but is capable of becoming aware of when he introspects or is given appropriate communications by others' (Janis and Mann, 1977, p. 95).

Before subjecting the hypothesis to an empirical test, an attempt is made to assess its face validity by referring to human decision making and animal research aimed either directly or indirectly at frequency-/familiarity-affect relationships. The reported evidence is meant to indicate that the familiar is preferred to the unfamiliar in cases where familiarity for some reason seems to be functional; the familiar[1] can either refer to people, animals, objects, situations, or activities. Also, previous hypotheses on frequency-affect relationships will be compared with the functional exposure hypothesis.

Below, some major conclusions of the relevant research will be presented without claiming, of course, that they provide a confirmation of the suggested interpretation of frequency-affect relationships. Rather, their main purpose is to give the general theoretical context in which the functional exposure hypothesis is supposed to fit. No claim is made either with regard to the degree to which the referred to conclusions are representative of this context.

[1] Although, strictly, it is more correct to speak of '(un)familiar' in combination with higher order cognitive processes - in the case of lower order processes the term 'exposure frequency' is more appropriate - we will use both terms interchangeably, except when clarity requires distinction.

2.4. The function of familiarity in human behavior

'The water-jar problem was used (...) to establish a set for a particular method of solution. It was found that the tendency to shift to a more direct method[1] of solution was inversely related to the level of anxiety as determined by the scale employed' (Maltzman et al., 1953).

'From these two sets of data it is inferred that stress or anxiety results in cognitive and perceptual processes that tend to preserve a 'familiar' perceptual and behavioral field for the individual' (Smock, 1955).

Duffy (1962), discussing effects of a high degree of activation, reported on a study by Patrick (1934): 'Excessive motivation has been found to produce disorganization in the behavior of college students in a quadruple-choice apparatus where, in order to escape, they had to discover which one of four doors was unlocked when the order of unlocking on successive trials was fixed by chance. When strongly motivated to escape because they were being exposed to a shower, an electric shock on the feet, or a continuous raucous noise, they frequently tried again and again a door which had just been tried[2] and found locked, even though other doors had not yet been tried. This was contrary to their behavior under ordinary conditions since, in the absence of strong stimulation, they usually tried, in a systematic fashion, one door after another' (...) H.R. Schaffer (1954) concludes that stress affects the rate and range of activity, exerting either an excitatory or an inhibitory effect, with disorganization of behavior occurring in both cases. He points out that a general constriction of functioning occurs in a stress situation and cites Hamilton and Brechevsky as having shown experimentally

1 Interpreted here as the (relatively) unfamiliar.
2 Interpreted here as the (relatively) familiar.

that behavior tends to lose its plasticity and assume a marked stereotypy[1]. The characteristics of learning under stress he attributes to a 'greatly increased sensivity of the learning mechanism under stress, which fixates whatever response is dominant at the time and prevents its being extinguished even when it is followed by nothing but unfavorable consequences[2]' (p. 171-173).

In Duffy (1962, p. 176) we read: 'The habit tendencies referred to may include temporary mental sets, as shown in an experiment in which a set for a particular method of solution of a problem was established; it was found that subjects with a high score on the Taylor anxiety scale showed less tendency than subjects with a low score to shift to a more direct[3] method of solution (Maltzman, Fox, and Morrissett, 1953). In the clinician's terminology, they were more 'rigid'. Rigid maintenance of set was in this instance a handicap[2] to performance.

Barthol and Ku (1959) found evidence for regression to first learned behavior under stress. If a person has learned two alternate responses to a stimulus and is placed under stress unrelated to the behavior being observed, he responds to the stimulus with the earlier learned behavior pattern[4].

In summary: '(...) various studies at the human level (...) have used such diverse stress stimuli as electric shock, fear of failure on a test, frustration, sudden cold showers, time pressures, and anxiety resulting from the interpretation of a Rohrschach, to bring about such rigid-like responses as perseveration, stereotyped behavior, loss of abstract ability, and delayed time of response to a problem requiring a new task approach (...). Statistical analysis reveals that under in-

1 Interpreted here as (relatively) familiar behavior.
2 (Note by the present author): This does not run counter to a functional familiarity interpretation; functionality does not necessarily mean instrumentality - see page 35).
3 Interpreted here as the (relatively) unfamiliar.
4 Interpreted here as (relatively) familiar behavior.

creasingly stressful psychological conditions there is a greater tendency to adhere to an induced behavior which has become inappropriate' (Cowen, 1952). Freely translated, under such conditions, there is a greater tendency to adhere to familiar behavior.

2.5. The function of familiarity in animal behavior

In some cases, the mere exposure interpretation has been applied to animal behavior. Obviously, there tend to be many problems with the transfer of conclusions based upon research on animal behavior to human behavior. Here, we will not go into these problems. Instead, we will refer to some evidence that seems to fit in the line of reasoning followed here, without taking this evidence as a test of the functional exposure explanation.

After being exposed to an aversive electric shock, rats 'prefer' to be located in familiar surroundings (Aitken, 1972)

'The initial reluctance to taste a new flavor is an example of neophobia[1] (Barnett, 1963; Cowan, 1977) (...). It is interesting that evidence for neophobia is greater in rats that have been poisoned or irradiated, even though this aversive experience was not paired with the taste' (Caroll et al., 1975).

Hill (1978) reviewed the effects of mere exposure on preferences in nonhuman mammals. He distinguished three effects that are involved in mere exposure effects:

- if the stimuli differ qualitatively, familiar stimuli are preferred over unfamiliar stimuli. Hill conceived this as 'the dissipation of an initial neophobia, so preference increases fairly rapidly to whatever level is genetically

[1] Preference for familiarity and neophobia reflect the same concept but each deal with a different location on the novelty-familiarity continuum.

programmed' (p. 1194);
- if stimuli differ quantitatively, adaptation level effects (Helson, 1964) apply, with the current adaptation level being most preferred;
- 'there is a tendency to prefer a stimulus less after a period of exposure than after a period of deprivation of that stimulus'.(...). This tendency increases the variety in diet, a greater opportunity of finding sustenance, and other such benefits' (p. 1194-1195).

Hill concluded that 'although the third principle in some situations counteracts the first, and perhaps also the second, the three nevertheless work together for the benefit of the organism' (p. 1195, underlining by the present author).

2.6 The function of familiarity in exposure-affect studies

After having compared previously proposed hypotheses on the mere exposure effects with the functional exposure hypothesis, we will turn to a reinterpretation of some of the reported experimental evidence. First, we will discuss the relative status or position of the functional exposure hypothesis.

The main point of difference between the functional exposure hypothesis and the mere exposure hypothesis is that while the latter predicts positive frequency-affect relationships to take place unconditionally, the former does not. The functional exposure hypothesis defies the notion of mere exposure as a sufficient condition for positive frequency-affect relationships to take place. Mere exposure must be accompanied somehow by some functionality of high exposure frequencies.

Otherwise, mere exposure is assumed to be of no significance for the development of positive affect[1].

The functional exposure hypothesis differs from the major explanations that have been suggested in the past in that it puts more emphasis on the understanding of nonpositive frequency-affect relationships. The existing hypotheses focus on the psychological variables underlying positive relationships, paying little attention to the theoretical relevance of the distinction between positive and nonpositive relationships (nonpositive relationships are being considered in explanations departing from inverted U-type relationships but, then, are the special case of a frequency overdosis - at lower frequencies positive relationships should be expected). A second difference between the functional exposure hypothesis and previous explanations, which is related to the first difference, is that the former is proposed as a more parsimonious, and thereby more generally applicable explanation of frequency effects on affect. Even though the other explanations may not be viewed as illegitimate, they are limited in that they concern specific person-, stimulus-, or situational variables. The response competition-, arousal- and other interpretations of positive frequency-affect relationships may each describe a special case of the more general phenomenon that familiar/ frequently exposed stimuli are evaluated more positively if they are capable of reducing or eliminating uncertainty as a nonpreferred psychological state (or of acquiring or maintaining a preferred psychological state). The functional exposure hypothesis differs from the other hypotheses by its emphasis on the total situation: it requires the

[1] The point made here resembles the one made by Cottrell (1968) with respect to a different behavioral effect: social facilitation. Zajonc (1965) hypothesized the mere presence of an audience to be sufficient for the emission of dominant responses. By simply blindfolding the audience in his study, Cottrell showed that the mere presence of an audience is not sufficient for a facilitation effect: critical is the possibility that the spectators can evaluate the individual's performance, indicating that the subject's evaluation apprehension is the mediating factor.

simultaneous consideration of person-, stimulus-, and situational characteristics, thus also allowing for interactions. In principle, knowledge of one or two types of variables only is insufficient for the assessment of the functional significance of exposure frequency. The functional exposure hypothesis may be viewed as a 'higher order'- or 'summary'-hypothesis, in agreement with each of the more specific 'lower order' hypotheses, but, if confirmed, better capable of specifying under which conditions positive frequency-affect relationships may be expected and under which conditions not.

A few examples:

According to the response competition explanation (Harrison, 1968; Matlin, 1970), the exposure of a novel stimulus elicits different, sometimes antagonistic response tendencies. By repeated exposure, response competition is reduced as is the associated negative effect. This explanation focuses on mere or simple novelty and apparently does not recognize that novelty in an experimental situation may be conceptually different from novelty in other situations: for an experimental subject, a novel stimulus is likely to be different, in a psychological sense, from the same novel stimulus encountered outside of the laboratory.
The distinction is thought here to be directly relevant for the explanation of exposure effects. Rather than focusing on the combined effects of person-, stimulus-, and situational variables, the response competition explanation merely addresses the first two types of variables.
The same can be said about arousal interpretations. Stimulus complexity, for example, is hypothesized to be related to exposure effects: the repeated exposure of a complex stimulus will reduce the arousal potential of this stimulus to the preferred level of arousal, resulting in positive affect. Several authors have operationalized complexity in physical terms: number of bits, and subjective redundancy. Experimental results either did or did not confirm hypotheses on the effect

of stimulus complexity on the type of frequency-affect relationship. As opposed to the arousal formulations, the functional exposure hypothesis would require the specification of complexity in terms of its significance for the preferred psychological state, considering that the same level of complexity may have a different significance for the same individual in different situations. For example, the complexity of a crossword puzzle is psychologically different for the same person in two different contexts: the puzzle exposed in a bookstore window and the puzzle exposed as experimental material in a laboratory for behavior studies. Similarly, even though its objective complexity does not change, a complex visual pattern introduced as task-material is not comparable, psychologically, with the same pattern introduced as a painting. The difference is such that repeated exposure is more likely to be relevant, desirable or functional in the former, and not in the latter case.

Even without explicit instructions regarding the nature of the stimulus, it is not hard to imagine that the degree of complexity itself may have an effect upon the subjective interpretation of the nature of the stimulus: a very simple stimulus may not arouse 'performance'-task expectations, or the person may not worry about his task-performance (the stimulus is so simple that, actually, nothing can go wrong). Moderately complex stimuli are more likely to arouse 'performance'-task expectations in combination with the subject's apprehension about the task outcome. Finally, highly complex stimuli (e.g. visual patterns with 900 bits and 20% redundancy) may be of such a nature that the subject either may not expect a 'performance'-task, or, if he still does, he is unlikely to be apprehensive about his performance as there will be a good excuse for not performing well. (This interpretation seems capable of accounting for the inverted U-relationships found between stimulus complexity and the occurrence of positive frequency-affect relationships).

The point is that complexity, defined in terms of stimulus characteristics alone, is unlikely to contribute much to the

explanation of frequency effects[1].

The argument presented here is well illustrated with the help of some exposure-affect studies. For example, Schick et al. (1972) found that high-anxiety[2] subjects rated familiar cartoons higher and unfamiliar cartoons lower than low anxiety subjects. Their hypothesis on this effect was formulated on the basis of Sheldon's (1969) optimal level hypothesis, asserting that the preference for novel or familiar stimuli is a function of the amount of novelty (arousal) present in the subject's environment. Specifically, a subject will control his level of stimulation by choosing a novel stimulus in a familiar environment and a familiar stimulus in a novel environment.

As another example, high need-for-approval[3] subjects showed significant preferences for familiar syllables, compared to the unfamiliar ones, whereas low need-for-approval subjects did not (Crandall, 1968). In addition, according to the same author, 'analysis of variance revealed a significant interaction between tolerance-intolerance of ambiguity and familiarity (...). The only familiarity level at which there was a significant difference between the groups was the one involving four previous ratings[4]. (...) IA (Intolerant of ambiguity-) subjects showed an increase from the lowest to the highest familiarity level' (p. 74 ff.).

1 A conclusion by Harrison (1977) seems to disagree with this: 'A satisfactory explanation of the exposure effect should take stimulus complexity into account' (p. 54). However, it does not. In a number of studies in the past, complexity was implicitly operationalized in the broader, subjective sense, even though the respective authors referred to objective stimulus characteristics only.

2 High anxiety, here as a personality variable, shows resemblance with the concepts of evaluation apprehension and need for approval.

3 In terms of its effect, a high need for approval may be compared here with high anxiety and evaluation apprehension .

4 This was the lowest familiarity level (note by the present author).

In particular, these studies suggest the necessity of allowing for the possibility of interactions between person-, stimulus-, and situational variables.

Summarizing, studies on human and animal behavior suggest a tendency to prefer familiar circumstances, stimuli and activities over unfamiliar ones if familiarity performs some function. In animal behavior studies, familiar stimuli are 'preferred' to novel stimuli if, and maybe even only if, stimulus familiarity has 'survival value' or 'adaptive utility'. Experimental studies on human behavior suggest that two factors that both may be interpreted as pertaining to, metaphorically, the 'survival' of a person as a good experimental subject, are significantly related to the (non)occurrence of positive frequency-affect relationships. Here, however, 'survival' must be taken in a broader sense, including not only the adaptation to the environment (the avoidance/reduction of a non-preferred psychological state) but also goal attainment (to maintain or acquire a preferred state).

Even though the functional exposure hypothesis seems to have face validity, the problem of the concept of functionality is that it is not unambiguous. The possible reasons for familiar stimuli to be(come) functional are many and manifold. These reasons correspond with specific motives which are just as numerous and varied. As the theoretical usefulness of the concept of functionality is negatively related to the specificity of these motives, it is necessary to meaningfully group and organize the specific motives into more general motivational patterns, each representing a variety of specific motives. One such a structuring is presented by McGuire (1974). His system is particularly relevant here because it attempts 'to present a classification of human motives that is sufficiently inclusive, relevant, and heuristically provocative so that it will direct our thinking to as many as possible of the gratifications to be obtained from mass communication' (McGuire, 1974, p. 171).

He identifies 16 human motives, based upon a conjunction of four dichotomies: 1) cognitive vs. affective motives; 2) motives for the maintenance of equilibrium (preservation) versus motives related to personal growth[1]; 3) motives associated either with actively initiated behavior or with a more passive response to circumstances; and 4) motives directed toward the achievement of either a new internal state or a new external relationship with the environment. McGuire indicates how one should deal with such a set of motives: '(...) when we are interested in studying some particular domain of human behavior (...), it is wise to take a (...) eclectic view and consider how each of a wide range of human motives (such as the set mentioned here) affects the (...) behavior in question' (McGuire, 1974, pp. 351-352). Here, provisionally, the behavior in question is the set of affect-responses of a subject in the 'conventional' exposure-affect experiment as they are associated with more or less frequently exposed stimuli. The dichotomies indicated by McGuire are relevant for the present discussion as they suggest the potential range and nature of possibilities of high(er) exposure frequencies to become functional. However, we are not concerned here with the question of whether and how each of the 16 motives might be

[1] The combination of these first two dichotomies generates 4 sets of 4 motives each, which are presented here for illustrative purposes only:

1) cognitive mode, preservation: consistency, attribution, categorization, objectificaton.
2) cognitive mode, growth: autonomy, stimulation, teleological, utilitarian.
3) affective mode, preservation: tension-reduction, expressive, ego-defensive, reinforcement.
4) affective mode, growth: assertion, affiliation, identification, modeling.

operating in exposure experiments. Rather, the point is whether our understanding of frequency-affect relationships is facilitated by departing from the degree of functionality of high(er) exposure frequencies (for achieving the outcomes at which the motives are directed). Therefore, it is not necessary to give an extensive review of all of these 16 motives. We will limit ourselves here to the presentation of some examples of how high(er) exposure frequencies may relate to some of the general motives and thereby may be functional:

- the tension-reduction motive (affective mode, active initiation, aimed at a new internal state). S is intolerant of ambiguity and attempts to reduce ambiguity by seeking relatively unambiguous/more familiar situational elements.
- affiliation motive (affective mode, active initiation, aimed at a new external relationship). S wants to improve his relationship with E. He suspects that some stimuli are more frequent because E likes those stimuli better than the less frequent ones and expects that E will be pleased (with him) if he shows that he also likes these frequent stimuli.
- categorization motive (cognitive mode, (+/-) passive response, aimed at a new internal relationship). S simplifies the complexity of the experimental situation by structuring it into convenient categories. Categorization is facilitated by familiarity with the stimuli to be categorized.
- utilitarian motive (cognitive mode, (+/-) passive response, aimed at a new external relationship). S anticipates a memory task and retrospectively knows that familiar stimuli are most likely to 'help' him cope with the present situation.

The examples given in connection with some of the general motives each reflect a specific motive (that is represented by the more general motive). That is, for each general motive other examples may be given. Then they deal with a different specific motive, however.
As indicated before, it will not be necessary, nor economical, to deal with the various general motives in the following.

Instead, we will collapse them into one single basic motive: the motive to acquire/maintain a preferred psychological state or to avoid/reduce a nonpreferred state. This motive was already mentioned earlier in the description of the central hypothesis (see page 35). There, we more specifically referred to uncertainty reduction.

The general motives in McGuire's (1974) matrix all may relate directly or indirectly to the motive to reduce uncertainty, if we conceive[1] of uncertainty as determined by incongruity[2] or by the inability to predict the future. According to Kagan (1972), this latter source of uncertainty is particularly salient 'if the doubt centers on the experience of potentially unpleasant events like punishment, physical harm, failure, or rejection. Unpredictability implies that the person does not know what behaviors and mental sets to activate in preparation for the future, and potentially incompatible dispositions or ideas can be generated'. (p. 55), thus adding an additional component to the concept of uncertainty: apprehension concerning its consequences.
In short, on the basis of our previous reinterpretation of the (mere) exposure experimental situation and on the basis of the considerations around the concept of uncertainty, we may conclude that the notions of (un)certainty and uncertainty reduction are likely to be useful when empirically establishing the role of functionality of high(er) exposure frequencies as a mediating factor in frequency-affect relationships.

1 Following Kagan (1972).
2 Incongruity refers to the incompatability between cognitive structures, between cognitive structures and experience, or between cognitive structures and behavior (see Kagan, 1972, p. 54). Incongruity (or conflict) can take place at three levels (Katz, 1969): the objective logical level, the psychological level (see Abelson and Rosenberg, 1958) and the level of the logic of the unconscious. This latter distinction is relevant here because it coincides with the previously made assertion that functional exposure may be the result of both conscious and preconscious activities and processes (p. 37).

3. A GENERAL TEST OF THE FUNCTIONAL EXPOSURE HYPOTHESIS: SOME LABORATORY EXPERIMENTS

The main purpose of this dissertation is to contribute to an understanding of frequency effects on consumer affect. It was decided to reassess the available, albeit not specifically consumer behavior related evidence and attempt to extrapolate to consumer affect later (rather than starting a whole new line of research directly aimed at frequency effects in the consumer area). As a result of this approach, the previous chapter emphasized the subject in the social psychological laboratory and not the consumer. The approach taken there is also reflected in the research plan. At first, an attempt will be made to empirically assess the validity of the functional exposure hypothesis. Since this hypothesis has been derived from the characteristics of the experimental situation, the laboratory is considered to be the most appropriate place for an initial test. For the sake of scientific parsimony, it is important to start out from the established paradigm: the not specifically consumer behavior oriented experiment (from which it is not allowed to generalize to consumer frequency-affect relationships directly). Therefore, if and after the hypothesis is confirmed in the more conventional type of exposure-affect study, we will proceed by assessing the relevance of the hypothesis for the explanation of consumer frequency-affect relationships.

As, in realistic situations, it may be hard or impossible to have control over the exposure frequency and because it may also be impossible to find a situation in which extraneous factors do not mediate or interact with (the effect of) exposure frequency, correlational research is considered inappropriate here, also because correlations do not specify the direction of causality. Therefore, when studying consumer frequency-affect relationships, we will employ the experiment as our research tool. Because of the limiting conditions of experimental laboratory research, however, conclusions will

not directly pertain to the operation or significance of exposure frequency as a factor outside of the laboratory and should be considered preliminary.

The purpose of the first experiment will be to obtain frequency-affect relationships under circumstances that 1) show resemblance to circumstances in the 'conventional' mere exposure experiment, and 2) differ with respect to the degree to which functionality of the higher exposure frequencies may be assumed to develop, so that an indication is obtained as to whether functionality in fact mediates frequency-affect relationships.

In accordance with the earlier presented tentative description of S's approach of the (exposure) experimental situation, we assume that, in an experimental situation, the degree of functionality of higher exposure frequencies can be manipulated indirectly through the manipulation of Ss' (un)certainty. Two types of instructions will be employed:

1) Instructions that preclude feelings of uncertainty. In line with the conceptualization of uncertainty in the previous chapter, these instructions may be aimed at
   a) predictability/a clear course of action, or
   b) the reduction of apprehension associated with unpredictability/a lack of a clear course of action.
2) Instructions that generate feelings of uncertainty and that do not relieve any associated apprehension.

ad 1a) Predictability/a clear course of action. This alternative involves two possibilities: one possibility is to inform subjects, prior to exposure to stimuli at different frequencies, about the quality of their performance after exposure. The other possibility is the introduction of a 'nonperformance'-task, by definition involving a clear course of action. Both possibilities are discussed briefly here.

Predictability. It may be assumed that the possibility of something becoming functional is related to the 'degrees of freedom' that S perceives to have in a particular (experimental) situation[1]. For example, Person 1, viewing himself as absolutely incapable of carrying out some task, whatever the task-circumstances may be, is less likely to judge a (any) task-related instrument as functional than Person 2, who is more optimistic with regard to, but not convinced of his abilities (and thereby uncertain). Also for Person 3, who is certain that he is perfectly capable of doing a task by himself without outside support[2] will judge a task-related instrument as less functional than Person 2. We may give subjects task outcome expectations comparable to those of Persons 1 and 3 by indicating to them what their post-exposure judgment of the task is most likely to be: respectively 'very hard' and 'very easy'. More specifically, if S is informed, prior to exposure, that the post-exposure task will be very hard (or very easy), higher exposure frequencies will be less instrumental/functional than when the task is introduced as neither very hard nor very easy or when no reference to task-difficulty is made (Person 2).

A clear course of action. Prior to exposure, S can be made to expect a 'nonperformance-task' in which any outcome or answer, that is, any course of action, is acceptable. Higher exposure frequencies are not functional simply because there is no reason for them to become functional in any way. An example of a 'nonperformance'-task is a 'like/dislike'-task, in which S is requested to give his personal evaluation on a positive-negative dimension. In this task, S's personal taste, or aesthetic values, are at stake. To these, no objective norm (in terms of correct/incorrect) can be attached.

1 Few perceived degrees of freedom is synonymous here to high predictability.

2 This reflects the other 'direction' of certainty: certainty with regard to a positive (as opposed to a negative) outcome.

ad 1b) If, prior to exposure, S can be made to believe that there is no need to be apprehensive about the outcome of a 'performance'-task (a task in which S's performance can be evaluated on the basis of some objective norm), functionality - of anything - is irrelevant. Hence, higher exposure frequencies will not acquire functionality.

Instructions relating to 1a (two possibilities) and 1b are employed to form the first three conditions of Experiment 1. Conditions 4 and 5 are viewed as control conditions. In Condition 4, Ss are made to expect a 'performance'-task (for a description, see earlier); Ss in Condition 5 receive the conventional mere exposure instruction.

It is hypothesized that

1) In Conditions 1, 2 and 3, which form the 'Nonfunctionality-Condition-set', nonpositive frequency-affect relationships will be observed.
2) In the Functionality-set (Conditions 4 and 5), positive relationships will be observed.
3) (Checking the interpretation of the conventional mere exposure setting that Ss, due to a lack of pre-exposure instructions and the exposure of unusual stimuli, expect a performance-task) Ss in Condition 5 will expect a performance-task rather than a non-performance-task.

3.1 EXPERIMENT 1: MERE EXPOSURE VERSUS FUNCTIONAL EXPOSURE: AN INITIAL COMPARISON

Method

Subjects: 90 male students from the Tilburg University (in the first two years of their studies, psychology students in their first year only) participated in this study. They were divided evenly over the 5 conditions - 18 each. Participants had signed up for two consecutive studies (of relevance for instructions in Condition 3 - see section 'Procedure', Condition 3). One suspicious subject was replaced.

Stimulus material

The stimuli were six paralogs of three syllables each, formed by alternating vowels and consonants: HEWONAT, ZODEGIN, DEZUTAN, BANEGUS, DUPORAK, and CUDIMOL. Prior to the experiment, a number of stimuli had been rated as to their affective neutrality by non-participating students. Non-neutral stimuli were excluded. Stimuli were presented on slides, black capital letters on a white background, clearly visible to all Ss.

Procedure

Ss had to sign up for participation. The experiment was run by two experimenters. Conditions were not run separately, except for Condition 3 (for obvious reasons - see later).
Upon entering, Ss were welcomed and required to be seated at one of the 4 tables at a distance of anywhere between 10 and 15 feet from the projection screen. The tables were located so that any information transfer between them would be unlikely and certainly would not remain unnoticed by E. Ss were informed that instructions would exclusively consist of written material, and were asked to remain silent. The oral information was aimed at establishing a relaxed but serious experimental atmosphere. After the initial written instructions, for

which Ss were given ample time to read, stimuli were exposed. The various frequency-levels were 0, 1, 3, 6, 10 and 15[1]. Stimuli associated with the various levels were distributed evenly over the total exposure sequence and so that a particular stimulus did not follow itself. Stimuli were exposed for 2 seconds each. Interexposure intervals were 4 seconds. For the timing, the projector was equipped with a timing-device. Stimuli were rotated over frequencies.
In order to make the timing of the procedural phases equal for the various conditions (exposure-rating intervals in particular should not be different), conditions were run simultaneously in the experimental sessions.
The affect-rating phase followed the exposure-phase without delay. Stimuli were rated once, exposure times were 2 seconds and interstimulus times 4 seconds. This latter time-span proved enough - Ss were required to give their first impression. In order to maximize contrast between frequency-levels, the order of frequencies in the rating-phase was fixed (6, 0, 15, 1, 10, 3). The respective instructions were:

Condition 1 (very hard/very easy task)
For one half of the Ss: 'In a moment, we will show you 35 slides with words. After the slide presentation there will be a task. (Participants of a previous investigation had to do the same task and they found it a very hard one). Please watch the slides closely'.
For the other half of the Ss in this condition, 'very hard', was replaced by 'very easy'.

[1] The choice of frequency-levels is always somewhat arbitrary. This is problematic as this choice may affect the outcomes. For example, (too) many exposures of a particular stimulus may result in less positive or even negative affect relative to affect as associated with more moderate exposure levels. However, in previous experiments using more or less similar ranges of exposure levels as chosen for here, often monotonic positive (log) frequency-affect relationships were observed.

Condition 2 (nonperformance task)

'You belong to the first participants of a new phase in our study. We will merely ask you to judge the quality of the 35 slides that we will show you in a moment. The attached questionnaire is to be used for the evaluation. You can take a look at it now. Then, please watch the slides closely'. The attached questionnaire contained 5 very short multiple-choice questions ('How well could you see the words ?; Were the letters large enough ?; Was the light too bright ?; Do you wear glasses ?; How far do you sit from the screen ?').

Condition 3 (no apprehension)

Ss had signed up for participating in two consecutive studies. In this condition, E informed Ss that, as the result of some technical failure, data of the first study could not be used so that this study was cancelled. He asked them to wait until the start of the second study (which could not begin right away). In the interval, E aroused Ss' interest in the cancelled study. He generously offered them the opportunity 'to participate as if, since they were only waiting anyway'. Then, Ss received the Condition 5 (mere exposure-) instruction.

Condition 4 (performance task)

In this condition, the instructions should both motivate the subjects to do well and avoid the impression that their task would be either very hard or very easy, thus distinguishing it from Condition 1. To ensure this, instructions were chosen to be formulated as follows: 'In a moment, we will show you 35 slides with words. After the slide-presentation you will receive a task in which you should try to obtain as high a score as possible. Please watch the slides closely'.

Condition 5 (conventional mere exposure condition)

'We will show you 35 slides with words. Please watch them closely'.

Following exposure, Ss received an 'in-between-question': the affect-rating. Stimuli had to be rated on a 9-point scale (9=

'this word makes an extremely favorable impression upon me'; 1= 'this word makes an extremely unfavorable impression upon me'). Prior to this rating-task, Ss in Condition 5 were asked to indicate the perceived chance of having to do a performance-task and the perceived chance of a nonperformance-task (chances adding to 100%). It was made clear how both types should be interpreted. This extra question for Ss in Condition 5 was not confounded with an increased interval between the exposure- and the rating-phase relative to Ss in other conditions as the little extra time needed was equal for all conditions, being run simultaneously (except for Condition 3). After the stimulus-rating, Ss received a bogus task reflecting initial instructions. Finally, they were questioned for suspicion and received instructions relating to the second study, which is of no interest here.

Results

In the debriefing phase it was established that the instructions had been understood correctly by the Ss, also the Ss in Condition 3, who had been made to believe that their data would be of no value to the experimenter. Parenthetically, in a number of cases E had to ask the latter Ss to take the completed data sheets out of their pockets and give them to him.

Our main point of interest lies in the nature and the degree of the differences in the slopes of the best-fitting straight lines to the profiles of the various conditions or condition-

sets. Therefore, analyses of linear trend[1] were performed (Winer, 1971).

Essentially, the five specific conditions can be conceived of as belonging to two more global conditions: the Functionality-condition and the Nonfunctionality-condition.The Nonfunctionality-condition comprises Conditions 1, 2 and 3 (being, respectively, the hard/easy task condition, the nonperformance task condition and the no apprehension condition), while Conditions 4 and 5 (respectively, the performance task condition and the mere exposure condition) form the Functionality-condition. For reasons of completeness, it was decided not to restrict the experimental design to two conditions only. It seems most appropriate to focus now, in the analysis, on both

[1] An analysis of linear trend is often used in analyses of frequency-affect relationships (e.g. Matlin, 1970; Matlin, 1974; McCullough and Ostrom, 1974; Amster and Glassman, 1966; Vanbeselaere, 1980; Burgess and Sales, 1971).
An analysis of linear trend is similar to an ordinary analysis of variance. The difference lies in the transformation of the raw individual data and in the corresponding correction for the transformation in the computational procedure of the analysis of variance. Each individual has an affect-score for each of the frequency-levels. Per individual, the nature of the frequency-affect relationship is established by multiplying his affect-scores with the appropriate coefficients of orthogonal polynomials associated with the linear function. These coefficients differ with the amount of levels on the frequency-continuum (for 5 and 6 levels they are, respectively, with rising frequency-levels: -2, -1, 0, 1, 2 and -5, -3, -1, 1, 3, 5). For example, an individual scoring, consecutively, 2, 1, 3, 3, and 5 on five rising exposure-levels, receives sumscore 8. The mathematical products of affect-scores and coefficients are summed per individual, yielding a positive or negative sumscore or sumscore zero. The sign of the sumscore is an indication of the direction of the slope relative to slope zero, the size of the sumscore indicates the (relative) steepness of the best fitting straight line. Individual sumscore may be summed per condition.
The analysis of linear trend assumes (psychologically) equal intervals on the frequency continuum. It is assumed here that, due to the nature and order of the stimuli associated with the various frequencies, the range and size of the frequency-levels employed, and the time-interval between the exposures, the differences between the exposure-frequency differences are psychologically not meaningful.

the possible difference between the two global conditions and on the hypothesized differences between the various specific conditions. (Of course, before combining specific conditions into more global condition-sets it will be necessary to check differences between specific conditions).

The confirmation of the main hypotheses would require the observation of the following outcomes, from general to more specific:

- there is no significant interaction within each of the condition-sets if frequency-affect relationships relate to single conditions;
- (provided that there is no significant within-set interaction so that specific conditions may be combined) there is a significant interaction between the frequency-affect relationships of the two condition-sets/the two global conditions;
- the main effect for frequency of exposure is significantly positive in the Functionality-set and not significantly different from slope zero in the Nonfunctionality-set.
- simple, specific condition-bound, main effects for exposure frequency should be not significantly different from zero in Conditions 1 (hard/easy task), 2 (nonperformance task) and 3 (no apprehension), and significantly positive in Conditions 4 (performance task) and 5 (mere exposure condition).

In Table 1, p. 192, the mean affect-scores per frequency-level are presented per condition. See Figures 1 and 2, p.209. Table 1 also contains, per condition, the sum of the mean affect-scores, transformed by coefficients of orthogonal polynomials (linear trend).

Table 1, p. 192 and Figures 1 and 2, p. 209 about here

Before proceeding to the concerning analysis, it is necessary to check whether Condition 1, in which two different instruc-

tions (hard/easy task) were presented to different Ss, can indeed be considered as a single condition rather than two. An analysis of linear trend showed no significant interaction ($F_{1,16} = 1.49$, n.s.) so that Condition 1 may be treated as one condition.

As expected, the interactions within each of the sets are non-significant (within the Functionality-set, $F_{1,34} = 2.63$, n.s.; within the Nonfunctionality-set $F_{2,51} = 0.42$, n.s.). See Tables 2 and 3 for the main and interaction effects (within subjects).

Tables 2 and 3, p. 192, about here

In Table 4, the analysis of linear trend on the two condition-sets is summarized.

Table 4, p. 193 about here

The effect for exposure frequency is significant ($F_{1,88} = 13.37$[1], $p < .001$). More informative is the significant interaction between the two sets of conditions ($F_{1,88} = 6.00$[1], $p < .05$). As hypothesized, the effect for exposure frequency is significant in the Functionality-set ($F_{1,34} = 16.11$, $p < .001$) and non-significant in the Nonfunctionality-set ($F_{1,51} < 1.0$, n.s.).

Also Table 5 with the simple effects of exposure frequency in the various conditions shows that the exposure effects are generally as predicted.

Table 5, p. 193, about here

[1] Unweighted means solution.

For the Nonfunctionality-conditions 1, 2 and 3, the $F_{1,17}$-values for exposure frequency are, respectively, 0.77; 0.07 and 0.61. For the Functionality-conditions these values are 2.58 and 17.84, for Conditions 4 and 5 respectively. The overall pattern confirms hypotheses 1 and 2, even though the F-value of Condition 4 fails to reach significance. Yet, it shows a trend in the expected direction.
Hypothesis 3 (p. 54), stating that in the (what we have called) 'conventional' mere exposure experimental setting Ss expect a performance rather than a nonperformance-task, is supported by the data. In the concerning condition, Condition 5, 14 out of 18 Ss expected a performance-task more than a nonperformance-task, that is, they rated the chance of a performance-task higher. Three subjects considered the chance of a performance-task between 0% and 50%. Only one S did not expect such a task at all (0%).

Discussion

The pattern of results seems to justify the conclusion that functionality of the higher exposure frequencies may indeed be the necessary condition for positive frequency-affect relationships to occur (that is, if it was functionality that was manipulated indirectly by the instructions). However, there are at least two critical questions that remain to be dealt with. The first one concerns the outcome of Condition 4. Although the results of this condition tend in the predicted direction, significance is not reached. A possible post-hoc interpretation is that by emphasizing 'a score as high as possible' on the performance-task, the nature of this condition may have changed in the direction of that of Condition 1, the hard task instruction. (Even though we may not take the following as a validation of this post-hoc interpretation, an analysis of linear trend in the Condition-combination 1 (hard task) and 4 did in fact show an almost significant main effect for exposure frequency ($F_{1,25} = 3.78$, $p < .10$), while no

interaction was observed ($F_{1,25} = 0.08$, n.s.), suggesting no difference between the two manipulations).

The second question deals with the absence of a manipulation check on functionality itself. As it is impossible, by the nature of this variable, to manipulate it directly, and because the degree of functionality is assumed to change over time in the sequence of exposures while the frequency-levels are being approached, an ordinary manipulation check was judged to be inappropriate here. Considering the experimental procedure and instructions, subjects would have considered a manipulation check probably rather awkward. This might have raised their suspicion with regard to the experimental hypothesis.

Considering the nature of the experimental outcomes, it seems warranted to address the two questions in an additional experiment: Experiment 2.

A final remark concerns the nature of Condition 2 (nonperformance task). One might object that this condition differs (with an additional aspect) from other conditions in that, by the instructions, Ss' attention is shifted from exposure frequency differences to the physical characteristics of individual stimuli. However, <u>all</u> stimuli were of the same 'perfect' quality, so that it is very unlikely that perceptions of non-perfect quality or quality differences have competed with the observation of frequency differences.

3.2 EXPERIMENT 2: UNCERTAINTY MEASURED INDIRECTLY AND FUNCTIONALITY OF HIGHER EXPOSURE FREQUENCIES

In Experiment 2 we will focus upon the two questions that were raised in connection with the procedure and results of Experiment 1.
Experiment 2 will be mainly concerned with the issue of the manipulation check. Additionally, it should provide information as to the correctness of the post-hoc interpretation of the nature of Condition 4, Experiment 1, in which results were in the predicted direction but failed to reach significance. More generally, the results of Experiment 2 should provide evidence for the role of functionality of higher exposure frequencies in positive frequency-affect relationships.

Ideally, a check on the operation of a functionality-principle should 1) involve an unobtrusive measure, which is, here, a measure that cannot be controlled by S and that does not provide him with any clues concerning the experimental hypothesis, and 2) be capable of monitoring stimulus-bound functionality changes over time in the exposure sequence. A measure that is assumed to meet these requirements is the GSR (Galvanic Skin Response)[1].
Several studies in the past (reported by Duffy, 1972) indicate that GSR-measures may be useful for the present purposes. For example, in a study on the learning of nonsense syllables and of word lists, Schönpflug (1965) found that subjects who were instructed to learn the lists showed higher activation/more GSR-reactivity than subjects who were instructed merely to look at the lists. Grings and Lockhart (1966) reported that when subjects learned the cue that made it possible for them

[1] According to Venables and Christie (1980), GSR is the most widely known term for exosomatically measured phasic skin responses. Other terms have been suggested (one of which is the 'Skin Conductance Response', SCR, proposed by The Society for Psychophysiological Research (Fowles et al., 1981). GSR refers to the phasic response, a short-term change in skin conductance, as opposed to the slowly fluctuating conductance level.

to avoid an electric shock, the magnitude of their GSR decreased over trials. Bingham (1943) observed greater GSRs for words that subjects reported as very 'meaningful, significant and important' than for words that were described as less so. Davis (1934), among others, found that skin conductance increased when a task was performed and more so when the task was a difficult one. Generally, 'many different types of stressful situations have been found to be related to skin conductance phenomena' (Duffy, 1972, pp. 592-593).
Among others, Berlyne (e.g. 1961, 1965) established that the GSR is associated with uncertainty, conflict and confusion. Hence, we may expect the GSR to be positively related to the intensity of such states: a reduction of, say, uncertainty should be reflected in a drop in GSR reactivity. If the more frequently exposed stimuli in an exposure-affect experiment are evaluated more positively because of their ability to reduce uncertainty, as the functional exposure hypothesis implies, one should expect positive frequency-affect relationships to be positively associated with a decline, over time, of the size of the GSRs as associated with the more frequently exposed stimuli. More specifically, persons/subjects who show a positive frequency-affect relationship will show a decrease of the GSR with increasing exposure frequencies, whereas a smaller[1] decrease is expected if no positive relationship develops. In spite of their apparent potential usefulness for the present purposes, the psychophysiological literature indicates that GSR-measures, because of possible reliability and validity problems, should be employed and interpreted with caution. For this reason, the GSR-measures in the present experiment will be used in a relative sense only. We will consider relative changes between and within conditions and will make no claim as to the comparability of GSR-levels and

[1] Some GSR-activity may be expected in the first part of the exposure sequence because of the novelty of the stimuli per se. With increasing exposure frequencies, this novelty and the associated GSR-activity is reduced. This effect is assumed to take place in both experimental conditions, thus not differentially biasing them.

-changes with those observed in other experiments.

It is hypothesized, then, that Ss showing positive frequency-affect relationships have a larger positive difference between the GSR-activity in the first half of the exposure sequence and the GSR-activity in the second half (subtracting the latter from the former) as compared to Ss showing no positive frequency-affect relationship.

In order to increase the likelihood that frequency-affect relationship differences will be found and to check the post-hoc interpretation of Experiment 1's Condition 4, two conditions are formed: a nonperformance-condition as in Experiment 1 and a performance-condition, the latter one now without the emphasis on the desirability of a score as high as possible (for reasons explained in the discussion of the results of Experiment 1).
Therefore, we also hypothesize that a positive frequency-affect relationship will be observed in the performance-task condition and not in the nonperformance-task condition. Then, if we combine the two hypotheses, we may expect the GSR-decline to be larger in the performance-task- than in the nonperformance-task-condition, to the extent that the division of Ss over the two conditions matches the division of Ss over positive and nonpositive relationships.

Method

Subjects: 36 male students of the Moller Institute Tilburg participated in this study; 18 were assigned to each of the two conditions. The data of 5 participants had to be discarded, reducing the number of Ss in the performance-task condition to 15 and in the nonperformance-task to 16. One subject spontaneously guessed E's interest in the relationship between exposure frequency and liking, one started talking during the exposure phase, and there was a technical (GSR-measurement) failure in the remaining three cases. These sub-

jects could not be replaced (exam time). All subjects received *f* 7,50 for participation.

Stimulus material

The stimulus material was the same as employed in Experiment 1: six paralogs of three syllables each, formed by alternating vowels and consonants, and initially affectively neutral (on the aggregate). Presentation was on slides; the stimuli could be seen easily.

GSR-measurement

The measurement instrument used was a Conductron 330, calibrated so that 1 micromho change in fasic skin conductance showed 1 mm deflection on the pen-record of a Hellige-recorder, paper moving at 1 mm per second. Electrodes were attached to each S's fore- and middle-finger of the nonpreferred hand. The recorder was located in the experimental room, but so that the recording was not visible to the subject.

Procedure

Because of the GSR-recording only one S could participate per experimental session. Upon entering, S was welcomed by E and received an explanation of the experimental procedure. No mention was made of stimulus exposure frequency differences nor of the affect-rating after exposure. During the explanation S was attached to the electrodes. It was made clear to him that their function was to record, not to electrocute. All instructions were oral, unlike those in Experiment 1, considering that it would have been awkward in the two-person interaction to give the very short instructions on paper. The instructions were standard per condition:

Condition 1 (performance-task):

'In a moment I will show you 35 slides with words. After the slide presentation I will give you a task for which you will receive a score. Please watch the slides closely'.

Condition 2 (nonperformance-task)

'You belong to the first participants of a new phase in my study. I will merely ask you to judge the quality of the 35 slides that I will show you in a moment. During the presentation, I will try out the technical equipment. Please watch the slides closely'. Some examples of the type of questions that could be expected later were given.

Stimulus-presentation and GSR-recording started about 5 minutes after the electrodes had been attached to S's fingers. Like in Experiment 1, stimuli were exposed 0, 1, 3, 6, 10 or 15 times, frequencies distributed evenly over the total sequence and so that a particular stimulus did not follow itself. Stimuli were exposed for 2 seconds each. Interstimulus intervals were 10 seconds[1]. Stimuli were rotated over frequencies within conditions. The affect-rating followed the exposure-phase immediately and was introduced as an 'in-between question'. As in Experiment 1, stimuli were rated on a 9-point scale (9 = 'this word makes an extremely favorable impression upon me'; 1 = '(...) extremely unfavorable (...)'). In the rating phase, stimuli were exposed for 2 seconds. Interstimulus intervals were 4 seconds. Before leaving, Ss were questioned for suspicion, debriefed and paid.

Results

Ss showed no signs of apprehension concerning the GSR-measurement. In the debriefing it was checked whether instructions had been correctly understood and interpreted. Unlike in Experiment 1, the nonperformance-task instruction turned out to be not completely successful. Four of the students in this condition indicated that they simply could not believe (when receiving instructions prior to exposure) that they were 'only to test the quality of the slides as one of the first participants in a new phase of the study'. Instead, they unequivo-

[1] Interstimulus intervals were chosen on the basis of information by Berlyne et al. (1963).

cally expected a task that we, in our terminology, would call a 'performance-task'. For these 4 Ss (and for these 4 Ss only) the nonperformance-task instruction was apparently overruled by attributes of the experimental situation, so that in fact a task was expected that would fit the description of a performance-task.
This posed E for a dilemma: strictly speaking, the data of these Ss should be discarded because of an unsuccessful manipulation. On the other hand, all four Ss definitely and clearly had the impression, during the exposure phase, that a task would follow that would not be easy. Therefore, the actual manipulation was in fact a performance-task manipulation.
It was decided to exclude the four Ss' data from the analyses but to report the outcomes of the analyses with the concerning data (added to the performance-task condition data) in footnotes.

A GSR-deflection was included in the analysis if it started between 1 and 4 seconds[1] after the onset of an exposure. Deflections were measured in millimeters relative to the baseline[2]. As individual differences with regard to the size of the deflections were considerable, deflection data were transformed into z-scores (adding to zero per individual). In order to assess GSR-deflection changes over time, the exposure-sequence was somewhat arbitrarily divided in two equal halves, 17 exposures each (the stimulus with exposure frequency 1 was located in the middle of the sequence). For reasons of comparability, only the data of the 10- and 15-frequency levels

1 On the basis of information provided by Venables and Christie (1980) and Edelberg (1972).
2 Here, the magnitude rather than the amplitude was measured. Venables and Christie (1980) propose the former term for the mean response size over all stimulus occasions, including the ones on which a zero response occurs, and the latter term for the average size of response calculated as the mean of all non-zero values. According to these authors, magnitude measurement is to be advocated.

were used in the analysis. The principal GSR change measure was the difference between the mean of the z-scores obtained in the first half of the sequence (for both 10- and 15-frequency level stimuli) and the mean of the z-scores obtained in the second half of the sequence (again for the most frequently exposed stimuli). A positive difference (the former mean minus the latter one), then, indicates that the deflections in the first half of the sequence were larger than those in the second half, which is taken here as reflecting a reduction of uncertainty, conflict or confusion as associated with the frequently exposed stimuli.

The GSR-deflection changes were calculated for Ss with positive and for Ss with nonpositive frequency-affect relationships. (For the computation of individual trend-scores, see p. 59). Ss with positive frequency-affect relationships showed significantly larger positive GSR-deflection changes than Ss with nonpositive frequency-affect relationships (means: 0.72 and 0.10, respectively; $t_{(25)} = 1.91$[1], $p < .05$, one-sided), confirming the major hypothesis.

An additional hypothesis was that in the performance-task condition a positive frequency-affect relationship would be observed and a nonpositive one in the nonperformance-task condition. Table 6, p. 194 presents mean affect-scores per frequency-level per condition and, per condition, the sum of the mean affect-scores transformed by coefficients of orthogonal polynomials (linear trend). See also Figures 3 and 4, p. 210. Finally, in Table 7, p. 194, an analysis of linear trend is summarized.

Tables 6 and 7 p. 194, and
Figures 3 and 4, p. 210 about here

[1] If the data of the 4 renegades are included, $t_{(29)} = 1.77$, $p < .05$ (one-sided).

In Table 7 it can be seen that there is a significant effect for conditions (analysis of linear trend, $F_{1,25} = 5.15$[1], $p < .05$, unweighted means solution), with a significantly positive (mean: 10.27[2]) slope in the performance-task condition ($F_{1,14} = 5.10$[3], $p < .05$). The slope of the nonperformance-task condition (mean: -3.67) is not significantly different from zero ($F_{1,11} = 0.90$, n.s.). Therefore, also the second hypothesis is confirmed[4].

Discussion

Even though the nonperformance-task did turn out to be weak in this experiment, the analysis provided support for the two hypotheses. The confirmation of the critical hypothesis suggests that an increase of the exposure frequency, insofar as it leads to a positive frequency-affect relationship, is accompanied by a reduction of GSR-activity, which is taken here as a reflecting uncertainty reduction.

Both hypotheses were empirically supported. However, as not every single individual subject showed the hypothesized behavior, it may be problematic to combine them into one hypothesis that predicts the GSR-decline to be larger in the performance-task condition than in the nonperformance-task condition. (Similarly, a partial correlation between variables A and B and one between B and C may not combine into a significant correlation between A and C). A comparison of the GSR-declines in the two conditions did in fact produce a nonsignificant difference, with a somewhat larger mean decline in the

1 Including the 4 Ss, $F_{1,29} = 5.48$, $p < .05$ (unweighted means solution)
2 Including the 4 Ss (see earlier): 9.42.
3 Including the 4 Ss, $F_{1,18} = 6.46$, $p < .05$
4 The observed effect cannot be attributed to different initial GSR-levels of the two conditions. Even though the initial average GSR-level is somewhat higher in the performance-task condition, the difference with the nonperformance-task condition is not significant ($t < 1.0$).

performance task condition ($t_{(25)} = 0.74$[1], n.s.).

One might object that, for example, the response competition hypothesis would equally predict a decline of GSR-activity to accompany repeated exposures as the result of reduced response competition. However, in the first place, the main function of this experiment was to provide a check on manipulations used in Experiment 1, where a more critical test took place. In the second place, to stress a point made earlier, the functional exposure hypothesis agrees with other hypotheses to the extent that they (implicitly) depart from uncertainly reduction. The uncertainty notion is capable of encompassing the major notions as put forward by earlier explanations.

A flaw of this experiment concerns the nonperformance-task manipulation, which turned out to be partially unsuccessful: 4 subjects expected some performance task. Possible causes of this effect are the use of technical equipment, the two-person oral interaction, and the fact that Ss had been asked to come all the way from another educational institute for a test-run only (in that case, why not simply ask students from the University where the study takes place?). A question that has not been addressed is whether the number of apparently unsuccessful manipulations does have implications for the seemingly successful manipulations in the concerning condition. In other words, are there reasons to believe that subjects, who seemingly did accept the content of the instructions, in fact did so with scepticism or doubt? It is not possible to give a more conclusive answer to this question than by emphasizing that subjects were questioned for suspicion and were debriefed carefully.

1 Including the 4 Ss (see earlier) : $t_{(29)} = 0.66$,n.s.

3.3 EXPERIMENT 3: EXTERNALLY MANIPULATED UNCERTAINTY AND FUNCTIONALITY OF HIGHER EXPOSURE FREQUENCIES

The change in GSR-deflection, employed as the dependent variable in the previous experiment, was assumed to be a good proxy-variable for uncertainty reduction. Even though the outcomes of that experiment fit well into the theoretical argument provided earlier, a proxy-variable is just that and no more. Therefore, and because of the insignificant GSR-reduction in Experiment 2's performance-task Condition, an additional experiment is carried out in order to attempt to find more unambiguous support for the role of functionality. In Experiment 3 we will differentiate groups of persons on the basis of the extent to which functionality of the higher exposure frequencies, in terms of uncertainty reduction, can be expected to develop.

The conditions of Experiments 1 and 2 may be conceived of as located on a dimension that ranges from 'certain of the unavailability of a positive outcome' through 'uncertain' to 'certain of a positive outcome'. The 'hard task'-Condition (Experiment 1) lies near the former extreme, the 'easy task'-Condition near the latter and the remaining conditions are situated somewhere in-between. Considering the hypotheses and related findings of Experiment 1, suggesting that positive frequency-affect relationships may only be observed at the non-extremes, the question now is: just where are the remaining conditions located on the specified dimension and what is its theoretical relevance ?

Theoretically, the extremes do not pose a problem. If a person is convinced that it is impossible for him to obtain a favorable outcome on a task, this impression is unlikely to change with anything but a personal experience or very convincing evidence indicating the contrary. For example, if a 90-year old non-skier is requested to ski down a slope (linear, significantly different from zero), the mere frequent observation

of (presently not-employed) skiing-equipment seems very unlikely to make him feel more at ease. Conversely, a person convinced of his ability to ride a bicycle over a distance of 20 yards without falling off, may be assumed not to care about which of the qualitatively similar bicycles X and Y is given to him for carrying out such a task, even if he has seen bicycle X more often than bicycle Y. According to the functional exposure hypothesis in both extreme cases, higher exposure frequencies will not be functional and no positive frequency-affect relationships will be observed.

With regard to the question as to the location of the non-extremes on the referred-to dimension, let us first attempt to assess the nature of an intellectual task for a student (as provided in Experiment 1). It seems legitimate to assume that, in general, University students are relatively certain as to their ability to perform well (to score above average) on what may be called an intellectual task, simply because of their previous experiences with such tasks. Therefore, the subjects (University students) in Experiment 1 may also be expected to have been relatively certain of good performance (positive outcome).

On the basis of this reasoning it can be hypothesized that if Ss are uncertain of a positive outcome, the frequency-affect relationship will be more positive as compared to Ss who are more certain of a positive outcome or of the absence of such an outcome. When stating this differently so that the hypothesis predicts the more positive frequency-affect relationships to be observed when the probability of a positive outcome or success is not equal to or does not approach 0.0 or 1.0, it is possible to make a comparison with Atkinson's (1964) theory on achievement motivation, which will be discussed briefly here. This theory, sometimes referred to as an instrumentality theory because of its emphasis on the evaluation of end states, maintains that an individual's tendency to approach success, T_s, is greatest when the probability of success, P_s, is intermediate or .5 on a 0.0-1.0 scale. The T_s is lowest at

both extremes of the P_s-axis. The inverted U-relationship is found by combining, i.e. multiplying, two components: P_s and I_s. I_s is the incentive value of success, equal to one minus P_s. Thereby, Atkinson argues for a positive relationship between the distance to the goal and the incentive value of that goal. However, it seems possible to argue also in the opposite direction: the attractiveness of a goal increases with its nearness (or reachability, conspicuousness, prominence, etc.). The latter argument is advocated by Vroom (1964). Thus, Atkinson predicts incentive value to increase with distance from the goal and Vroom predicts the opposite. Paradoxically, both predictions have received a reasonable amount of support from the experimental literature (Deci, 1975). It seems possible to reconcile the theories by assuming that the critical factor, distance from the goal or 1 - P_s, is associated with two different psychological mechanisms that may operate simultaneously even though they have opposite effects. One mechanism shows some reactance effect associated with a large distance, the other has some orientation effect associated with a small distance from the goal. Since both mechanisms relate to the motivation to achieve a positive outcome, they do not lead to conflict; they correct each other but do not cancel each other's effect.

It is suggested here that it may be appropriate to correct the neat inverted U-relationship between P_s and T_s as suggested by Atkinson with a third component. In line with Atkinson's model (P_s is multiplied with I_s), the correction can be made by multiplying the product of Atkinson's two components with the third component, C_s, conspicuousness of success[1]. This third component is equal to P_s. The resulting negatively skewed distribution of motivation-levels over the P_s-axis (from left to right: 0.0 to 1.0) can be described by the mathematical expression $T_s = P_s^2 - P_s^3$. The correction leads us to expect the

[1] Or any other term that reflects the nearness to the goal.

highest motivation-level anywhere between P_s=.5 and P_s=1.0[1], and not at P_s=.5[2].

After this side-step we now return to the issue of the (non) functionality of higher exposure frequencies. It seems possible to extend the above reasoning to include the motivation to achieve a positive outcome. (Then, we should adapt the subscripts to the four variables P_s, I_s, C_s and T_s accordingly: P_{pos}, I_{pos}, C_{pos} and T_{pos}, where 'pos' refers to positive outcome). As the dependent variable in the translated relationship, T_{pos}, may be assumed to be directly (positively) related to the functionality of higher exposure frequencies, we may take the latter as the relationship's dependent variable. Then, because of the hypothesized relationship between the functionality of higher exposure frequencies and the positiveness of the frequency-affect relationship, we may predict the latter relationship to be most positive for individuals who perceive P_{pos} to be somewhat larger than .5.

The approach taken here implies two hypotheses:

1. The frequency-affect relationship will be more positive when $0.0 < P_{pos} < 1.0$ than when P_{pos} equals either 0.0 or 1.0.
2. The frequency-affect relationship will be more positive when P_{pos} is moderately high ($.5 < P_{pos} < 1.0$, for example .75) than when P_{pos} is moderately low ($0.0 < P_{pos} < .5$, for example .25)[2].

In order to be able to investigate the effect of different P_{pos}-levels on the slopes of frequency-affect relationships, it is necessary to take an alternative for intellectual tasks as the type of performance at issue, given that students are subjects. A type of performance that is presumed here to be associated with a larger (subjective) P_{pos}-range is some physical performance that is not easy and with which Ss can be

[1] Strictly mathematically, the highest motivation level is to be found at P_s = .67.

[2] Outcome or consequences held constant.

assumed to be unfamiliar. The task, which will be discussed in more detail later, involves the drawing of a line between two parallel other lines with a pen, requiring fine motor movements. (Slides of pens are used as stimuli in the exposure phase).

Experiment 3 comprises 5 conditions, two of which are the control conditions (4 and 5, respectively: P_{pos} = 100%; and: no frequency manipulation, affect-rating only). The remaining 3 conditions were located at different points on the P_{pos}-axis. It was attempted to vary P_{pos} by indicating to what extent people in a pre-test had been capable of meeting the task's requirements: in Condition 1 (P_{pos} moderately low), Ss were told that 25% of the pre-testers had succeeded , in Condition 2 (medium P_{pos}, neither high nor low), the percentage was 50%, and in Condition 3 (P_{pos} moderately high): 75%. A logical extension would involve, for control condition 4, instructions informing Ss that 100% of the pretesters had been successful (P_{pos} = 100%). However, this might have increased suspicion (why a test if it does not discriminate?) or task-associated arousal (if I fail I must seem really stupid). Therefore, a condition was included in which Ss can be assumed to be convinced of their ability to do the task right: the instructions were that they should try out the preferred pen and rate it.
As, in this experiment, the emphasis is basically on the non-extremes of the P_{pos}-dimension, no analogous 'zero probability of positive outcome-condition' is included here. We would expect the results of such a condition to be similar to Condition 4. This expectation was confirmed in Experiment 1 - no difference between hard task/easy task-instruction effects).

If the functional exposure hypothesis applies, it may be hypothesized that:

1. Of the three conditions: 1) P_{pos} = 25%; 2) P_{pos} = 50%; and 3) P_{pos} = 75%, the last condition will show the most positive frequency-affect relationship and the first condition

the least positive relationship[1].

2. No positive frequency-affect relationship will be observed in Condition 4: P_{pos} = 100%.

Method

Subjects: 95 students of the Eindhoven School for Industrial Design participated in this study on a voluntary basis. The data of 4 Ss were incomplete and had to be discarded. Due to constraints unrelated to the experimental manipulations (see Procedure), the distribution of Ss over the 5 groups was uneven, with respective n's of 22, 24, 26, 9 and 10.

Stimulus material

The stimulus material consisted of 6 slides of drawing-pen designs[2], made up by E. Prior to the experiment, these six stimuli had been selected out of a set of 12 stimuli on the basis of their affective neutrality (all 12 pens had been rated on a positive-negative affect-scale; the pens that received an approximately neutral average score were selected). As it was practically impossible to have the rating done by a sample of students of the school in Eindhoven, it was done by students of the Tilburg University. (Because of a possible bias, a control-group was included in the experimental design, so that stimuli that would turn out to be non-neutral in Eindhoven would be identified. Data relating to such stimuli would then be excluded from the analysis. However, all data could be included as all stimuli were approxi-

1 Outcomes or consequences held constant.

2 The stimulus material employed in the present experiment differs in appearance from the paralogs used in the first two experiments. Basically, however, they are similar in that both types of material may be described as task-related material. In the present experiment, pens rather than paralogs were used to accomplish a better fit with the interest of the subjects, students in Industrial Designing. Furthermore, there does not seem to be any reason why the functional exposure hypothesis should not apply with other stimuli than paralogs.

mately affectively neutral). The slides, black figures on a white background, were projected by an ordinary projector with remote control on a fixed screen in front of a lecture hall. The stimuli were clearly visible from all seats.

Procedure

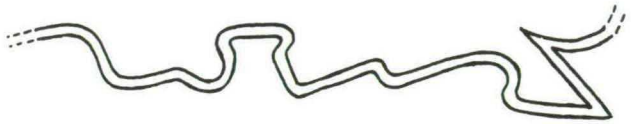
Ss had been requested to participate in the evening, prior to a guest lecture. Because of the possibly large group of Ss (N was unknown before the experiment), E was assisted by two persons. 10 Ss were randomly selected out of the participants that arrived early. They were taken to a different room and rated the stimuli that were shown to them on paper (control condition, no frequency manipulation). The other Ss gathered in the lecture hall. E welcomed them and thanked them for participating, made a few introductory remarks and requested absolute silence (conditions could not be strictly spatially separated). Written instructions were handed out by the three E's:

Condition 1:

'Recently, new models of drawing pens have appeared in the stores. We had drawings made of them, which we will show you on slides in a moment. After the slide presentation we would like to have your impression of them. You do not have to indicate whether you think they look nice or not but whether you think it is good to work with them.
For this, you will receive a rating-sheet after the slide-presentation. By the way, price, ink supply and durability of the pens are about the same.
Next, you will receive a task that you will have to carry out with the pen[1] that looks best to you (that you gave the highest rating). We will present you a piece of paper with a rather complex pattern on it, formed by two parallel lines, 2 millimeters apart from each other. As an example, we have

[1] Ss could clearly see the 'pen-boxes' on the front desk that E had brought with him.

copied here a little section of this pattern:



The purpose of your task is two-fold:

1. You should draw a line between the two lines without touching them, like this:

2. You should draw this line as fast as you can.

Precision and speed are critical in this task. Those who are capable of finishing the total 'route' within 30 seconds without a mistake will be rewarded with one of the pens that will be shown. (A pre-test indicated that ± 75% of the participants was not capable of meeting both requirements). The rules of the task will be handed out after the slide presentation. A last request before we show you the slides: please indicate how confident you are that you can meet both requirements. (You do not have to be modest). The higher the number that you place a cross at, the more confidence you have'.

little confidence	1	2	3	4	5	6	7	much confidence

(End of the instruction).

For Conditions 2 and 3, the percentages of 'pre-testers not succeeding' were changed into 50% and 25%, respectively.

Ss in Condition 4 received the following instruction:

'Recently, new models of drawing pens have appeared in the stores. We had drawings made of them, which we will show you on slides in a moment. We will ask you to indicate, after the slide presentation, your impression of each of the pens. You do not have to indicate whether you think they look nice or

not, but whether you think it is good to work with them. For this, you will receive a rating-sheet after the slide presentation. By the way, price, ink supply and durability of the pens are about the same. Next, we will ask you to try out the pen that you considered best (that you gave the highest rating) and rate it'.[1] In order to avoid suspicion or confusion, no confidence-rating was requested in this condition.

Stimuli were exposed 0, 1, 3, 6, 9 or 12 times. Frequencies were mixed. A stimulus did not follow itself. During the exposure phase, stimuli were shown for 2 seconds each, interstimulus intervals were 4 seconds. After the exposure-phase rating-sheets were handed out (to the extent that this increased the time-interval between the exposure-phase and the rating-phase - 95 sheets had to be distributed by 3 persons - this interval was equal for all conditions, thus not differentially biasing them). The order of stimuli in the rating-phase was fixed: the successive frequency-levels were 6, 0, 12, 1, 9, 3. Stimuli were shown once for 2 seconds. Ss had 4 seconds to rate each stimulus on a 9-point scale.
After the collection of all the instructions and rating-sheets Ss were debriefed. A suspicion-question was directed at the total group. No task followed, Ss were debriefed. In order to compensate somewhat for the loss of an opportunity to 'earn' a pen, a number of pens were available that could be collected after the session for those interested. (Of course, these pens differed from the ones shown on slides).

Results

The mean affect-scores per frequency-level per condition are presented in Table 8, p.194. Table 8 also contains, per condition the sum of the mean affect-scores transformed by coef-

[1] Considering the nature of the stimuli and the type of subjects (Industrial Designing students), it is assumed here that, also in this condition, we may speak of a task.

ficients of orthogonal polynomials (linear trend). For a visual presentation of linear trends per condition, see Figures 5 and 6, p. 211.

Tables 8, p. 194 and Figures 5 and 6, p. 211 about here

The first analysis concerns the question as to how we should interpret the confidence-rating. Theoretically, two interpretations are possible: the rating measured confidence as the resultant of external information on the probability of being successful at the task, or, it measured confidence as it is dependent upon the cumulated experiences with performance-task-outcome contingencies in comparable physical tasks in an S's past. If the first interpretation is correct, confidence may have been affected by the probability manipulation: P_{pos} 25%, 50%, 75% (100%). If confidence is unaffected by this manipulation, we must assume that it is based upon previous experiences with performance-task-outcome contingencies in comparable tasks in the past or on general self-confidence. The distinction is not critical for analyses relating directly to the hypothesis, however. Yet, if the two possible sources of confidence may be taken as independent factors, the analyses need to take this into account.

The results relating to this question, as summarized in Table 9, show that the confidence-rating is not associated with the P_{pos}-manipulation.

Table 9, p. 195 about here

The differences between the percentages of the pre-testers being successful at the task did not affect Ss' confidence ($F_{2,45}$[1] = 0.70, n.s., unweighted means solution). Now that the confidence-rating apparently cannot serve as a manipulation check, we will have to be cautious with regard to the inter-

[1] A number of confidence-ratings were missing.

pretation of results relating to the external P_{pos}-manipulation. However, we are still capable of performing an internal analysis on the effects of P_{pos}-levels on the frequency-affect relationship, P_{pos} now operationalized as S's confidence in his ability to perform well on a physical task requiring fine motor movements. Confidence and the manipulated P_{pos} may also interact, although no prediction can be made as to how an interaction might turn out.
In the overview of the analyses, we will first present the results as they relate to externally manipulated P_{pos} (Conditions 1 through 4, in comparison with Condition 5 - no frequency manipulation).

P_{pos}, externally manipulated

In the absence of a manipulation check, we will assume, for now, that the manipulations were successful so that analyses can be reported. However, when interpreting the results, this will have to be kept in mind.
As can be seen in Table 10, the effect of the P_{pos}-manipulation on the slope of the frequency-affect relationship tends toward significance (analysis of linear trend, $F_{2,52} = 2.67$, $.05 < p < .10$, unweighted means solution).

Table 10, p. 195 about here

Analyses on simple effects in condition-combinations with the control condition show:

- a nonsignificant interaction in the combination involving Condition 1 (25% - moderately low P_{pos}) and Condition 5 (control): $F_{1,30} = < 1.0$, n.s., unweighted means solution;
- an almost significant interaction in the combination involving Condition 2 (50% - medium P_{pos}) and Condition 5 (control): $F_{1,32} = 3.58$, $p < .10$, unweighted means solution; and;
- a significant interaction in the combination involving

Condition 3 (75% - moderately high P_{pos}) and Condition 5 (control): $F_{1,17} = 7.34$, $p < .05$, unweighted means solution. The observed interactions are in the predicted direction, the average individual trend (as calculated with the coefficients of orthogonal polynomials associated with the linear function over 6 observations in Conditions 1, 2, 3 and 5 being 4.91, 10.79, 15.44 and 1.7, respectively. With the appropriate caution, we may interpret these findings as supportive of the hypotheses.

Inspection of the simple interaction effects in the condition-combinations involving Condition 4 indicates, contrary to expectations (hypothesis 2), that this condition produced results most similar to that of Condition 2 (medium P_{pos}). There is no interaction in the combination of Conditions 4 and 2 (analysis of linear trend, $F_{1,48} = 0.16$, unweighted means solution), nor in the combination of Condition 4 with any of the other Conditions 1,2 and 3 (respective F-values being <1; <1; 1.17, df 1,33, n.s.). These results do not confirm hypothesis 2.

Confidence

In order to assess the effect of confidence on the frequency-affect relationship, two confidence-groups were formed. Considering the expected effect of confidence and the distribution of Ss over the 7 confidence-scale positions (the number of Ss per position, starting with position 1, was successively 1, 2, 4, 8, 11, 14 and 8), the first group was taken to cover the first 4 positions, including the scale's midpoint and the second group the remaining positions. An analysis of linear trend showed a significant interaction effect ($F_{1,46} = 8.76$, $p < .01$, least squares solution. As the external P_{pos}-manipulation did not affect confidence scores, we may interpret these scores as being not sample-specific. Because of this, a least squares analysis was considered more appropriate than an unweighted means analysis). See also Table 11.

Table 11, p. 195 about here

The most positive frequency-affect relationship was observed in the more confident group (mean: 13.88), as expected. Main effects for frequency were, for this group, $F_{1,32} = 43.04$, $p < .001$, and for the more inconfident group (mean: 2.47) $F_{1,14} < 1.0$, n.s. As can be expected on the basis of these outcomes, only the interaction in the combination of the control-group with the confident group was significant ($F_{1,41} = 8.09$, $p < .01$, unweighted means solution) and not in the combination with the inconfident group ($F_{1,23} = 0.02$, n.s., unweighted means solution).
An interaction-analysis of the two factors (externally manipulated) P_{pos} and confidence was considered meaningless due to a near-empty cell (n=1).

Discussion

The results that were obtained generally point in the direction of the functional exposure hypothesis. By reducing confidence in the possibility to achieve a positive outcome it is possible to render frequency-affect relationships less positive, a finding that can be meaningfully interpreted only with this hypothesis.
However, several comments need to be made. The first one concerns experimental hypothesis 2, which was not supported by the data. A nonpositive frequency-affect relationship was predicted in Condition 4 (P_{pos} 100%). Yet, a positive relationship was observed. This may possibly be explained by referring to the nature of the experimental situation, in which it may have been impossible to establish a $P_{pos} = 100\%$ condition: in this one-evening experiment all conditions (except for the control condition) were run simultaneously in the same room. As a result, it could not be avoided that Ss in Condition 4 watched Ss of other conditions receive a different instruction. For persons unfamiliar with psychological experiments this is likely to be somewhat strange in itself.

Furthermore, these other instructions contained unusual drawings (sections of the parallel-line pattern), which the other persons often used for a try-out. If this explanation is correct, it is not surprising that the results of Condition 4 are very similar to the ones obtained in the P_{pos} 50%-condition (Condition 2). As several conditions in the previous two experiments can be viewed as extreme points on the P_{pos}-scale and because convincing evidence was obtained for the hypotheses relating to these conditions, we will not address this further, having found support for the major hypothesis of the present experiment.

3.4 GENERAL DISCUSSION AND SUMMARY OF THE SOCIAL PSYCHOLOGICAL LABORATORY EXPERIMENTS

Adding up, evidence has been found for frequency-affect relationships to be(come) more positive:

- in task-situations as compared to non-task situations;
- given a task-situation, with confidence in one's ability to obtain a positive task outcome;
- given a task-situation, when there is (assumed to be) moderately high probability of a positive outcome as compared to (assumed) moderately low probability of a positive outcome
- with decreasing uncertainty, as approximated by GSR-changes associated with the more frequently exposed stimuli.

Some matters remained unresolved and some questions could only be partially answered. However, this does not seem to seriously question the pattern of results as it emerges from the combined experiments. The evidence of these experiments may be taken as supporting the functional exposure hypothesis as introduced in Chapter 2.
Therefore, it seems legitimate to take, at this point, the step towards questions related to the role of functionality in frequency-affect relationships in the area of consumer behavior. These questions will be addressed in the following chapter.39

4. FUNCTIONAL EXPOSURE AND CONSUMER BEHAVIOR; SOME LABORATORY EXPERIMENTS

It is the goal of this dissertation to contribute to an understanding of frequency-affect relationships in the area of consumer behavior. Now that we have found evidence for the functional exposure hypothesis in the previous chapter, it may be attempted to approach that area and later possibly even penetrate it.

Superficially, it seems simple to convert the 'typical' exposure-affect experiment into an exposure- consumer affect experiment:

- obviously, subjects are consumers also;
- stimuli may be announced as, for example, brandnames;
- instructions can be adapted to relate to some consumer 'performance-'or 'non-performance-'task; and
- after exposure, subjects are requested to rate 'brands' rather than other kinds of stimuli.

However, if we describe a consumer as an individual behaving in relation to (stimuli associated with) scarce goods and services in the marketplace, the term consumer behavior is not used correctly here. On the other hand, as long as we realize this, it does not seem harmful to use the term when in an experiment an attempt is made to provide subjects with a frame of reference that bears some similarity with that of consumers in the market place. For example, by having the procedure and instructions center around terms such as product, manufacturer, brand, price and quality.

Even though it might be easy to attach a consumer label to such an experiment, it would make sense only to the extent that we would be able to anchor it theoretically. For this we could compare the uncertainty notion as employed here with the notion of perceived risk as employed in the consumer behavior literature. Earlier (page 50) we conceived of uncertainty

following Kagan, 1972) as determined by incongruity or by the inability to predict the future. This latter source of uncertainty was combined with apprehension concerning its consequences. This conceptualization is also proposed for the notion of perceived risk, introduced by Bauer (1967) in the consumer behavior literature. All references to the concept consider the two components (their labeling or description may vary): unpredictability and consequences (for a recent publication on perceived risk, see Todd, 1982).
Since uncertainty manipulations proved helpful for the explanation of exposure-affect relationships in the experiments that were discussed in the previous chapter and because of the conceptual similarity between uncertainty and perceived risk, we may expect the same to be true for manipulations of perceived risk in an experiment that contains more consumer behavior related elements.

Before turning to the description of such an experiment it is necessary to point at some limitations. These are so important that they should be discussed before, rather than after, the experiment. First of all, the term 'consumer behavior' may have a connotation of being real life, which it may not deserve in the experimental situation. It might be better to speak, at this point, of 'behavior in an experimental setting of which some aspects resemble some characteristics of some real life pre-or post-purchase exposure setting'. To mention a few of the most apparent distinctive features of the experiment:

- experimental subjects are 'forced' to watch the stimuli;
- experimental stimuli are relatively similar to one another, exposed within a relatively short period of time, interspaced by equal time-periods and lasting equally long;
- at the time of exposure, subjects may be assumed to expect that they need to show some behavior with regard to the stimuli;
- to the extent that consequences of behavior do play a role, these are likely not to relate to a loss of purchase power/money.

In real consumer life, consumers generally may be expected to behave under different circumstances.

In Experiment 4, an attempt will be made to create more consumer-oriented conditions than in the previous experiments. It is obvious that Experiment 4 is not independent of those experiments, especially by their similar approach to uncertainty. The P_{pos}-component of uncertainty as employed in Experiment 3 is interchangeable with the unpredictability component of perceived risk. The consequence aspect in both uncertainty and perceived risk relates to a particular motive or some motives such as those described earlier when referring to McGuire (1974, see pages 47-50).

4.1 EXPERIMENT 4: FUNCTIONAL EXPOSURE AND COMPONENTS OF PERCEIVED RISK: AN INITIAL TEST

The central concept underlying Experiment 4 is perceived risk, which is dissected into three experimental factors, one of which relates to the (un)predictability component; the two remaining factors each deal with a particular aspect of consequence: evaluation and impact. More specifically, experimental factor 1, (un)predictability, is manipulated by providing Ss information concerning the probability of showing the right behavior, i.e. to make a correct consumer choice. With regard to consequences, we may distinghuish between their nature, in terms of positive/negative, and their impact: the extent to which there is an actual confrontation with the consequence. These two aspects of consequence form experimental factors 2 and 3. Factor 2 can be manipulated by informing Ss that there are (no) bad or unsatisfactory choice alternatives; Factor 3 can be manipulated by (not) requiring Ss to actually use or consume the chosen alternative.

We may expect perceived risk to be highest when, by the lack of choice-relevant information, there is a high probability of

choosing an unsatisfactory alternative ($\lesssim$ very low P_{pos}) that will have to be used personally by S after his choice. Perceived risk may be expected to be lowest in the contrary case in which complete information is provided about only satisfactory choice-alternatives ($\lesssim$ very high P_{pos}) and in which there is no request to use the chosen alternative personally.

Therefore, we may expect the three factors to interact in two- and three-way interactions. The two-way interactions may be expected for the factor Presence/Absence of choice-relevant information in combination with either the factor Quality-variation or the factor Personal use - more perceived risk if there is no information in combination with either quality-variation or the request to use personally.

Because of the clear relationship between uncertainty as approached in the previous chapter and perceived risk, we may expect the functionality of higher exposure frequencies, and thereby the positiveness of frequency-affect relationships to vary with perceived risk. In line with the theoretical arguments presented earlier and the obtained empirical support, it is hypothesized that frequency-affect relationships will be more positive when perceived risk is at a moderate level and less positive when perceived risk is either very high or very low. In the latter two cases, the higher exposure frequencies are assumed to be not functional. If there is nothing at stake, if perceived risk is very low, by definition, nothing is likely to be functional. If perceived risk is very high, a person may be assumed not to rely on higher exposure frequencies alone for solving whatever the problem is, which reduces their potential functionality. However, higher exposure frequencies may be functional under conditions of medium risk, in relation to the same possible motives as referred to earlier (see p. 47).

The three factors each will have two levels, forming a 2^3-design (see Table 12).

qu.variation / info / conse-quences	All good quality		Varying quality	
	info	no info	info	no info
Personal use	1	2	3	4
No personal use	5	6	7	8

Table 12: design Experiment 4.

In this design the highest level of perceived risk is assumed to be perceived in Condition 4 and the lowest level in Condition 5. According to the hypothesis, the least positive frequency-affect relationships should be observed in these two conditions and the (more) positive relationships in the remaining conditions.

Because of the nature of the experimental situation and because of the type of information provided by E, some of the conditions, and maybe even all conditions, are characterized by a high level of situational ambiguity for the Ss. One of the possible functions of higher exposure frequencies proposed here is the reduction of (perceived) ambiguity. However, because individuals have been found to differ with regard to their tolerance for levels of situational ambiguity (see for example, Budner, 1962, Howard & Sheth, 1969) the functionality of higher exposure frequencies may be expected to vary across Ss, and with it the slope of the frequency-affect relationship[1]. In order to be able to test the validity of this expectation, the tendency to perceive ambiguous material or situations as threatening is measured by a translated version

[1] the situation held constant.

of the Budner (1962) Scale of Tolerance-Intolerance of Ambiguity. A high score indicating tolerance, it may be hypothesized that there is a negative relationship between scale-scores and the slope of frequency-affect relationships: under ambiguous circumstances, a person who is intolerant of ambiguity will evaluate familiar, that is, unambiguous stimuli, more positively than less familiar stimuli. Interactions with perceived risk components may be expected: ambiguity tolerance alleviates risk and ambiguity intolerance aggravates risk. Since we do not know at this point how the four (three manipulated plus one internal) factors interact, it is not possible to predict the specific effect of interactions with (in)tolerance of ambiguity on the frequency-affect relationships. However, it seems more crucial, for now, to be able to conclude that variance is explained by (combinations of) variables that, according to the functional exposure hypothesis, should do so.

The dependent variable preference for the familiar (as opposed to the un- or less familiar) brandnames will be assessed again by the set of affect-ratings on frequency levels/ brandnames differing in exposure frequency. However, as our ultimate interest concerns the effect of exposure frequency upon consumer choice behavior (given a set of choice alternatives, under what conditions will the consumer choose the most frequently exposed alternative?), more than in the consumer's affect toward each particular alternative, affect is more interesting here to the extent that it is predictive of choice behavior. In the literature, affect(/attitude)-behavior discrepancies have received much attention. Cialdini et al. (1981) state that researchers no longer question <u>if</u> but investigate <u>when</u> attitudes predict behavior.

With regard to this latter point, two of the conclusions referred to by Cialdini et al. (1981) may be of particular relevance in the present context: the affect-behavior relationship is dependent, among other things, upon the degree of correspondence between the attitudinal and behavioral measures (Ajzen & Fishbein, 1977) and upon the degree of the subject's

commitment - whether he expects/intends to perform the behavior under consideration (Gabreny & Arkin, 1979): the affect-behavior relationship improves with the correspondence between affect- and behavioral measures and with the degree of commitment. These conclusions suggest that, when the primary interest is in consumer choice behavior as the dependent behavior, it may be useful to introduce an additional dependent measure, more closely resembling consumer choice and more committing than a (mere) set of affect-ratings. The most obvious dependent variable seems to be the exposure frequency of the chosen brand when subjects are requested to make a selection out of the various brands/brandnames that are available. This affect-measure is assessed through behavior that closely resembles consumer choice behavior, and, by making a choice, S does commit himself to one particular choice-alternative to the exclusion of other alternatives. Once the choice is made, the degrees of freedom or the behavioral possibilities are 'used up'.

Method

Subjects: 96 women of various ages participated in this study. They had not participated in any exposure-affect study earlier. Seven persons were replaced because of incompleteness of their data. Ss received a flower-coupon of *f* 7,50 for their participation. This gift was announced in the letter that requested them to be available for the present study. Subjects were divided evenly over the 8 conditions: 12 per condition.

Technical equipment

The experiment took place in the laboratory of the Psychology Department of the Tilburg University. The technical facilities of this laboratory allow for the possibility of having a direct interaction between E and a particular S, without this being noticed by other Ss. Interaction among Ss can be defi-

nitely prevented. Stimuli were recorded on a MEMOREX video-tape, and exposed through an INELCO video-recorder on PHILIPS monitors. Ss could not watch E 'manipulating' the technical material.

Stimuli

The stimuli employed were the names of French hamlets that non-Ss gave the most neutral ratings on an affect-scale (out of a set of French hamlets). These names were decided for because of their availability and because paralogs often do not 'sound right' as brandnames, or they are associated with existing brandnames because of common syllables (do paralogs sound right after X exposures ?). The stimuli were, in random order, TRESSON, ENCAUSSE, LE DORAT, PREGONDE, VERGONS and MARCILLAT. Stimuli were presented on monitors, black capital letters on a white background, clearly visible to all Ss.

Procedure

Upon entering, Ss received some initial information about the experiment. One of the reasons was to take away any fear for the laboratory-booths: noise-insulated tiny rooms with a chair and a writing board, floor surface about 25 square feet. The monitor could be watched through the double booth windows. Each subject was assigned to one booth, of which one of the double doors was closed. In the booth instructions were available. The exposure-phase was announced by the intercom-system so that all stimuli were attended to. Conditions were run simultaneously. A maximum of six Ss participated at the same time. The frequency-levels were 0, 1, 3, 6, 9 and 12. Stimuli were rotated over frequency-levels. In the exposure-sequence, a particular stimulus did not follow itself. Stimuli were exposed for 2 seconds each. Interexposure-intervals were 4 seconds. Immediately after the exposure phase, instructions relating to the (unannounced) affect rating were handed out.

These instructions informed Ss how to interpret the 7 points on the affect-dimension. Again by intercom, the rating-phase was announced. The time-lapse between the end of the exposure-phase and the start of the rating phase was 2-3 minutes. The stimuli were rated only once, exposure times were ± 2 seconds and interstimulus times ± 4 seconds. The changing of the stimuli in the rating phase was done by hand, making the timing somewhat imprecise. Rating phase stimuli were exposed by means of a separate camera onto the monitors. They appeared a little smaller on the monitor screen as compared to the exposure-phase, but could be seen easily by all Ss.
The order of frequencies in the rating phase was counter-balanced (as much as possible, perfect counterbalancing was practically impossible due to differing numbers of Ss in the various sessions).

The instructions were:[1]

Condition 1 (information, all good quality, personal use)

'In this study we will be concerned with a product that you do not know yet because it is a new product. There are several manufacturers of this product. Hence, there are also different brands of it. Later we would like you to select one brand out of these brands. They differ with regard to quality: some are excellent, other brands are less good. Yet, the least good brand is still very acceptable. All brands are minimally qualified as satisfactory.

The procedure will be as follows:
1. We show you the different brandnames
2. We present to you a very clear and simple table in which you find the brandnames with the corresponding price and

[1] In a limited pre-test among non-subjects it was checked whether instructions were correctly understood.

quality. It looks like this:

BRAND	PRICE	QUALITY
A	f 5	excellent
B	f 4	excellent
C	f 4	very good
D	f 4	good
E	f 5	very good

Of course, this table is only an example. Later you will receive a different table with the real brands. That table will be just as clear and simple.

3. With the help of the table with the real brands, you select[1] one of the brands. You will have ample time to do this, so don't hurry. (Persons who participated a few weeks ago found it very easy).
4. Subsequently, we show you what the product is and we give you the brand that you selected. Next, you will be requested to use the brand (while you are here, not at home).
5. After you used it, you evaluate the brand.

YOU CAN READ THIS INSTRUCTION ONCE MORE. DO NOT HURRY'.

Condition 2 (no information, all good quality, personal use):

The first part of the instructions is equal to that of Condition 1, up to point 1 inclusive.

'(...)

2. You select one of the brands
3. Subsequently, we show you what the product is and give you the brand that you selected. Next, you will be requested to

[1] The selection of an acceptable alternative is assumed to be simple, given the information provided.

use the brand (while you are here, not at home).
4. After you used it, you evaluate the brand.

YOU CAN READ (etc.)'.

Condition 3 (information, varying quality, personal use):

The first three sentences are equal to the ones in Condition 1.

'(...)
They differ with regard to quality: some are good, other brands are bad.
The procedure will be as follows:
1. We show you the different brandnames
2. We present to you a very clear and simple table (etc.). It looks like this.

BRAND	PRICE	QUALITY
A	*f* 5	good
B	*f* 4	very bad
C	*f* 4	fair
D	*f* 4	excellent
E	*f* 5	bad'

(For the rest of the instructions, see those of Condition 1)

Condition 4 (no information, varying quality, personal use)

The first part of the instructions is equal to that of Condition 3, up to point 1 inclusive. The second part is equal to

instructions in Condition 2, from point 2 on.

Condition 5 (information, all good quality, no personal use), Condition 6 (no information, all good quality, no personal use), Condition 7 (information, varying quality, no personal use), and Condition 8 (no information, varying quality, no personal use): instructions are equal to those of Conditions 1, 2, 3 and 4, respectively, except for the section relating to the usage of the brand. This section should be replaced by: 'By the way, you do not have to use this brand personally. Moreover, this brand has no relationship with the gift that you will receive at the end of the session.

YOU CAN READ (etc.)'.

After the rating-phase, Ss received a questionnaire containing manipulation checks, a question asking Ss to choose one of the brands - brandnames were listed here, and Budner's Scale of Tolerance-Intolerance of Ambiguity.
Finally, Ss were questioned for suspicion and debriefed.

Results

With three questions the manipulations were checked:

1. How large, do you think, is the chance that you will be able to choose a satisfactory brand ? Alternative answers: very large, large, medium, small and very small;
2. (For Conditions 1-4, personal usage): How (un)pleasant would you find it to use the chosen brand ? Alternative answers: very unpleasant, unpleasant, pleasant nor unpleasant, pleasant, very pleasant. (Note: Ss are not informed about the nature of the product); and
3. How well or badly informed do you think you are at the moment that you must make a choice ? Alternative answers: very badly, badly, rather badly, medium, rather well, well, and very well.

Since it would be hard or impossible to convey the exact conceptualization of perceived risk to Ss, an approximation was attempted through these questions. The first two make it possible to combine the unpredictability- and a consequence-component, the third focuses more exclusively on the unpredictability aspect.
Contrary to expectations, main- and interaction effects of the three experimental factors on the first and third manipulation-check were all insignificant (all F-values < 1.0). As there were very few (6) Ss indicating that they would find it unpleasant to use the chosen brand, it made no sense to combine, for Conditions 1 through 4 (personal use), the answers to the first two questions into a perceived risk score.
As the validity of the manipulation checks itself might possibly be at stake here, the planned analysis of variance on the effects of (the combinations of) the experimental factors on both dependent variables were performed anyway. For the mean values of the two variables[1] in all conditions, see Table 13. Table 14 contains the mean affect-scores per frequency-level and per condition, and, per condition, the sum of the mean affect-scores transformed by coeffiecients of orthogonal polynomials. See Table 15 for the mean affect-scores and the sum of the transformed scores per factor-level.See also Figures 7, 8, and 9.

Table 13 through 15, pp. 196-197, and
Figures 7, 8, and 9, pp. 212 and 213, about here

An analysis of linear trend showed a significant main effect for frequency, but no significant two-way interactions and no significant three-way interaction. The same pattern was found

[1] Prior to the analyses,for the variable frequency of the chosen brand absolute frequencies were changed into the corresponding coefficients of orthogonal polynomials belonging to a linear polynomial with 6 observations (see also page 59).

for the dependent variable exposure frequency of the chosen brand[1]. All main-and interaction-effects are far from significant. See Tables 16 and 17, pp. 197-198.

Tables 16 and 17, pp. 197-198, about here

It was hypothesized that the slopes of the frequency-affect relationships would be less positive in Conditions 4 and 5 than in the other conditions. Because of the negative results on the manipulation checks, this analysis is condensed into a test on the difference between the means of the linear trends of, on the one hand, the combination of Conditions 4 and 5 and, on the other hand Conditions 1, 2, 3, 6, 7, and 8 combined. The differences are not significant: for trends, the mean of Conditions 4,5 is 6.33, while the mean for the rest of the conditions is 8.22 ($F_{1,94} = 0.24$, n.s.). For frequency of the chosen brand: for Conditions 4,5 the mean is 1.35; for the rest of the conditions, the mean is 1.03. Note that the latter difference is in the wrong direction.

As external manipulations seemingly failed to have the expected effect, we will limit ourselves now to the comparison of individual persons in internal analyses, rather than making inter-condition comparisons. As the basis for such analyses we can employ two manipulation-checks: perceived chance of the ability to make a satisfactory choice (CHANCE SAT) and expected level of information at the time of choice (EXP INFO). We hypothesize more positive linear trends and higher frequencies of the chosen brand when CHANCE SAT and EXP INFO are relatively high than when CHANCE SAT and EXP INFO are

[1] The correlation between the two dependent variables is .39 ($p < .01$).

relatively low ('high' means more chance/more information)[1]. CHANCE SAT is dichotomized by taking as one level scores 1 (n=0), 2 (n=9) and 3 (n=57), respectively very large, large and medium chance of a satisfactory choice and as the other level scores 4 (n=9) and 5 (n=17), chance small and very small. The variable EXP INFO was dichotomized by combining scores 1 (n=3), 2 (n=21) and 3 (n=18), forming one level, and scores 4 (n=30), 5 (n=17) and 6 (n=3), forming the other. The differences for both trends and frequency of chosen brand are in the expected direction. See Table 18.

Table 18, p. 198, about here

For individual trends, the differences tend toward significance: CHANCE SAT: $t_{(90)} = 1.58$ ($.05 < p < .10$, one-sided); EXP INFO: $t_{(90)} = 1.55$ ($.05 < p < .10$, one-sided); for frequency of the chosen brand, however,the differences are not significant: CHANCE SAT: $t_{(87)} = 0.79$, n.s.; EXP INFO: $t_{(87)} = 0.78$, n.s.

Turning to the effect of Tolerance-Intolerance of Ambiguity[2] it is found, in an analysis of linear trend, that there is no

[1] Here, the reader is referred back to the theorizing underlying Experiment 3. For this experiment, the theories of Atkinson (1964) and Vroom (1964) were combined to expect the most positive frequency-affect relationships to occur when the chance to obtain a preferred outcome is between .50 and 1.00, and the least positive relationship at chance-levels .00 and 1.00.

[2] An individual's Tolerance-Intolerance of Ambiguity score is calculated, following Budner (1962), by adding the 16 sign-corrected Budner-scale items. The individual scores referred to here are the sumscores divided by 16. As the hypothesis considers two levels of (in)tolerance of ambiguity, the variable was dichotomized producing the levels: relatively intolerant of ambiguity and relatively tolerant of ambiguity. Here, the division was not made exactly at the scale-midpoint (4) as the resulting number of Ss in each group would not have allowed the investigation of interaction-effects. Rather, the total group was split into two subgroups that were almost equal in size ($\pm$ intolerant: ≤ 4.3750, n=49; $\pm$ tolerant ≥ 4.4375, n=44).

significant effect on individual (linear) trends. See Tables 19 and 20.

Tables 19 and 20, p. 199, about here

Yet, means are in the expected direction: 5.77 (± tolerant) and 9.16 (± intolerant). If frequency of the chosen brand is the dependent variable, tolerance of ambiguity does have a significant effect ($F_{1,84} = 6.02$, $p < .05$) and one significant interaction effect with personal use ($F_{1,84} = 6.28$, $p < .05$). See Tables 21 and 22 (and footnote page 100).

Tables 21 and 22, p. 200, about here

For the factor-level Personal use, there is no difference between tolerant and intolerant subjects (means = 4.00); For the factor-level No personal use, the frequency of the chosen brand is higher for the intolerant subjects (mean = 4.83) than for the tolerant subjects (mean = 3.29). The respective means of the exposure frequency of the chosen brand are: tolerant: 0.30; intolerant: 1.82. Finally, for both individual trends and for frequency of chosen brand no significant three-way interactions were observed. As it was not possible to extend the design with the tolerance of ambiguity-factor because of the then resulting near-empty cells, two separate analyses of variance were performed for the assessment of possible four-way interactions. Also here, nonsignificant F-values were obtained for both dependent variables. See Tables 19 through 22, pp. 199-200.

Discussion

The only hypothesis that is partially corroborated is the one involving the personality variable Tolerance-Intolerance of Ambiguity. Also, an expectation regarding internal analyses based upon manipulation checks was confirmed for one of the

two dependent variables. However, we must conclude that, generally, the hypotheses stated in the introduction to this experiment are not supported by the results. At the same time we should note that the main effect for frequency was significant. One of the possible reasons for this lack of support is that the functional exposure hypothesis does not apply to 'consumer behavior' in the laboratory. In the light of the findings obtained previously it seems more appropriate, however, to investigate the validity of other possible explanations for the present findings.

- The one that seems to be the most obvious one is that the external manipulations were unsuccessful in producing different levels of perceived risk. The manipulation checks support this interpretation. As the manipulation checks themselves may be subject to validity questions, a second check was performed some time after the experiment on a different group of 80 persons, prior to their participation as subjects in a different experiment. These persons, comparable in age and sex to the ones who participated in the present experiment, were requested, in the same laboratory-situation and under comparable circumstances, to read the instructions - 1 instruction per group of 10 persons. They were not informed that these instructions did not belong to the experiment that they had signed up for. With three questions it was attempted to assess the perceived risk components more precisely and to focus upon a possible different source of perceived risk: difficulty of choice. These questions were:
  -How hard do you think will it be to make a selection out of the brands later-on ? (Alternative answers: very easy; easy; neither hard nor easy; hard; and very hard);
  -How large do you think is the chance that you will select a dissatisfactory brand ? (Alternative answers: very large; large; neither large nor small; small; and very small); and
  -Would you find it unpleasant if the selected brand would

prove dissatisfactory ? (Alternative answers: yes, very unpleasant; yes, rather unpleasant; yes, a little unpleasant; no, I would not mind).
The answers that were given indicate also that external manipulations did not have the intended effect. All F-values of main- and interaction-effects on the answers of the three questions were smaller than 1.0. Furthermore, it was not useful to combine the first or the second question with the third into a perceived risk score because of a very small variance of the latter. Of course, as these results come from a different group of subjects, they cannot serve as input for an internal analysis.

- Even though Ss had indicated to understand the instructions (in the pre-test among non-subjects and in the debriefing), instructions were obviously complex and also abstract. They were complex because of the amount of information that was provided, and abstract as Ss did not know what type of product was involved. This may have hampered the effectiveness of manipulations, especially for Ss with little ability of abstract thinking.

- With regard to the factor quality-variation as a hypothesized co-determinant of perceived risk, it may be that, if information is provided, effects of factor-levels might actually be the reverse of those expected. It was assumed initially that high quality-variation leads to perceived risk. However, when information is provided it seems possible, post-hoc, that it is easier to make a selection out of a set of qualitatively very different alternatives than out of a set of highly similar alternatives. (Similarity of attractiveness has been proposed as a determinant of cognitive dissonance, e.g. Brehm and Cohen, 1962).

- When frequency of the selected brand is the dependent variable, a significant main effect is found for tolerance of ambiguity, and a significant interaction-effect for toler-

ance of ambiguity and personal use.
First, it should be realized that in a large set of analyses where p = .05 is taken as the significance threshold, the occurrence of (a few) significant effects becomes likely on the basis of mere chance only. Second, we must note that the concerning dependent variable was assessed some time after the exposure-phase, thus possibly confounding personal use with time-interval between exposure and rating (see also page 30).

- The exclusive attention to linear as opposed to other possible types of frequency-affect relationships may be partly or fully responsible for the lack of a meaningful interpretation of the data of the present experiment. Being primarily interested here in the linear relationships, another attempt will be made to relate such relationships to the concept of perceived risk. If this second attempt should turn out not to be fruitful either, the emphasis on linearity will be reconsidered.

Converging experimental findings and the points that were raised in the discussion so far, the only justifiable conclusion seems to be that it is almost impossible to draw a conclusion. However, adopting the optimistic view, the (limited) effect of (in)tolerance of ambiguity and the confirmed expectation regarding the outcome of one internal analysis, which both are in line with the functional exposure hypothesis are just enough stimulating to attempt an additional experiment in which the points that have been raised here will be taken into account.

4.2 EXPERIMENT 5: FUNCTIONAL EXPOSURE AND PERCEIVED RISK; A SECOND ATTEMPT

There is no need to consider at length the theoretical background of Experiment 5 as it is equal to that of Experiment 4. The two experiments differ primarily in terms of the operationalizations of perceived risk.
In the present experiment, instructions should attempt to manipulate perceived risk in a more simple, direct and less abstract fashion than in Experiment 4. The two dependent variables, linear trends and frequency of the selected brand, will be maintained, as well as the measurement of Tolerance-Intolerance of Ambiguity.

An attempt will be made to generate three levels of perceived risk: low, medium and high. It is hypothesized, in accordance with the hypothesis in Experiment 4, that preference for the more familiar brandnames will be higher in the medium risk than in the high- and low-risk situations. This should be reflected in both dependent variables. (In)tolerance of ambiguity is hypothesized to have a main- and interaction-effect. Intolerant Ss should show more positive frequency-affect relationships. It is not possible to predict what interaction-effect supposedly will take place.
Unlike in Experiment 4, a specific product will be mentioned to which the brandnames are purportedly attached. This product has to meet certain criteria in order to avoid that its characteristics or associations mediate the effects of the frequency manipulation. The product that is introduced is a 'roller pen', a new type of ballpen containing a more fluid ink than ballpens usually have. At the time of the experiment, this type of pen was barely marketed. A roller pen seemed ideal for present purposes because:

- it is a new product, so that Ss have no experience with the product. Additionally, since Ss are very unlikely to possess it, it is likely to be attractive;
- as a product, it does not seem very risky or very riskless,

thus allowing for risk variation through external manipulations;
- there does not seem to be a reason why people/Ss would not like to have it. After all, a pen is a frequently used instrument;
- when describing risk-levels in connection with the product, the experimenter does not have to go into detail as to what risk means;
- it is practical: a pen does not cost very much (necessarily), it is small, does not spoil, etcetera.

Method

Subjects: 48 persons, 20 men and 28 women of various ages participated. It was their first participation in an exposure frequency-affect experiment. Prior to the experiment it was announced that they would receive a gift of the approximate value of ƒ 7,50 for their cooperation. Ss were divided evenly over the three conditions: 16 Ss each. The data of 3 Ss were discarded because of incompleteness; these Ss were replaced.

Stimuli: The stimuli, presented on a monitor, black capital letters on a white background, were the same as those employed in Experiment 4 (TRESSON, ENCAUSSE, etc.).

Procedure

The experiment took place in the Laboratory of the Psychology Department of the Tilburg University. Ss were requested to sit at tables, situated vis-à-vis a Philips monitor. The distance to the monitor was such that all Ss could clearly see the stimuli. A maximum of 8 Ss participated at the same time (conditions were run simultaneously). Except for instructions and announcements (that were made directly without intercom) the procedure is equal to that of Experiment 4.

Instructions

Condition 1: Low Risk

'This study is on the evaluation of roller pens. These are pens that have features in common with both ballpens and fountain pens. Because they have the advantage of the ballpen and write lightly like a fountain pen it is expected that they will be sold very much in the near future.
The Consumers' Guide wrote[1] about these roller pens - the same as we employ in this study:

> 'All brands of roller pens have passed our test excellently. There are quality differences but a bad buy is definitely impossible' (Consumers' Guide, March 1981).

The value of the pens is between 7 and 8 guilders a piece. As a token of our gratitude for your cooperation you may select one of these pens later-on and keep it. It is not posible to try them out first because they are wrapped. However, should you, after selecting a pen, consider another pen somewhat more attractive, then we will simply change pens around. So, you will receive the brand that you prefer most. In a few minutes we will acquaint you with the brandnames. These will appear on the monitor.

Please read this information once more. Then, please answer the following questions before we start showing the brandnames:

1. How hard do you think will it be for you to make a selection out of the brands ? Alternative answers: very easy, easy, neither hard nor easy, hard and very hard.
2. How large do you estimate the chance that you will be able

[1] In the instructions the official magazine of the Dutch Consumers' Union: 'De Consumentengids' was referred to. In fact, this magazine did not report about such pens.

to choose the brand that corresponds with your preference ? Alternative answers: very large, large, rather large, neither large nor small, small and very small'.

Condition 2: Medium Risk

The instructions are equal to those of Condition 1, except for
1) the so-called Consumers' Guide section:

'You do not run the chance of a bad buy when purchasing a roller pen. Our test indicated that there are no bad roller pens. Yet, it can do no harm to be somewhat careful when choosing a pen because of the differences in quality. By the way, all pens are approximately equally priced. (Consumers' Guide, March 1981)'.

2) the sentence indicating that after the selection pens may be changed around.

Condition 3: High Risk

Again, the instructions are equal to those of Condition 1, except for
1) the so-called Consumers' Guide section:

'When choosing a roller pen the consumer must be very careful. Some brands are fair or good, others are just bad. And the bad brands are not cheaper than the good ones. In all, a very risky product. (Consumers' Guide, March 1981)'.

2) the sentence indicating that after the selection pens may be changed around.

Results

Before being exposed to the various brandnames, Ss had been requested to complete two questions, the answers to which are assumed to provide checks on the risk manipulation. One question involved the difficulty of choice, the other concerned the perceived chance of being able to select the preferred brand. For both questions, the means of individual scores are in the right direction. For difficulty of choice (1= very easy; 5= very difficult) the means in the Conditions Low Risk (LR), Medium Risk (MR) and High Risk (HR) are, respectively, 2.56; 2.63 and 3.69. An analysis of variance indicates a significant main effect for the risk manipulation ($F_{2,45}$= 9.85, $p < .001$). Tests on the differences between individual conditions show no significant difference between LR and MR ($t_{(30)} = 0.22$, n.s.), a significant difference between MR and HR ($t_{(30)} = 3.97$, $p < .001$), and a significant difference between LR and HR ($t_{(30)} = 3.77$, $p < .001$).
For the variable chance of preferred brand (1= very large; 7= very small) the pattern of differences is similar: there is an overall treatment effect ($F_{2,44} = 7.77$, $p < .01$), and the differences between LR ($\bar{X} = 3.19$) and HR ($\bar{X}$= 4.67) on the one hand, and between MR ($\bar{X}$= 3.25) and HR on the other are in the expected direction and significant (respectively, $t_{(29)} = 3.21$, $p < .01$; $t_{(29)} = 3.52$, $p < .001$). Contrary to expectations, also here the difference between LR and MR is not significant ($t_{(30)} = 0.16$, n.s.).

The outcomes of the manipulation checks leave us two options for the analyses on linear trends and on frequencies of the chosen brands. The first option is to distinguish three levels of perceived risk, looking at the direction of the cell-mean differences. The second option is to distinguish two levels of perceived risk, departing from the (in)significance of cell-mean differences. As no option seems preferable to the other, analyses relating to both of them will be presented. Table 23 contains the mean affect-scores per frequency-level and per

condition, and, per condition, the sum of the mean affect-scores transformed by coefficients of orthogonal polynomials (linear trend). See also Figures 10 and 11.

Table 23, p. 201, and
Figures 10 and 11, p. 214, about here

There is no significant effect of perceived risk on linear trends ($F_{2,45} = 0.60$, n.s.), neither when the LR-Condition is combined with the MR-Condition ($t_{(46)} = 1.44$, $.05 < p < .10$, one-sided). Yet, cell-mean differences are in the expected direction, with the highest mean in the MR-Condition. The means of the respective Conditions LR, MR and HR are 4.06, 5.63 and 0.44. For the analysis of linear trend, see Table 24.

Table 24, p. 201, about here

When the frequency of the chosen brand is taken as the dependent variable in the analyses, the cell means are 1.27, 3.25 and 0.00 for the LR- , MR- and HR-Condition respectively. An analysis of variance indicates a significant effect for perceived risk ($F_{2,44} = 6.42$, $p < .01$). See Table 25.

Table 25, p. 201, about here

As hypothesized, there is no significant difference between the LR- and the HR-Condition ($t_{(29)} = 1.21$, n.s.) a significant difference between the LR- and the MR-Condition ($t_{(29)} = 2.11$, $p < .05$)[1] and a significant difference between the MR- and the HR-Condition ($t_{(30)} = 4.21$, $p < .001$).
Combining the LR- and the MR-Condition and comparing the combination with the HR-Condition shows a significant difference as well ($t_{(45)} = 2.77$, $p < .01$; with a combination mean of 2.29).

[1] This analysis was performed even though the manipulation checks showed no difference between the concerning conditions.

It was hypothesized that Ss who are relatively intolerant of ambiguity will show more positive frequency-affect relationships than Ss who are relatively tolerant of ambiguity. This hypothesis calls for some division of Ss over the (in)tolerance of ambiguity-levels. The individual scores range from 1 through 7, with midpoint 4. Here, a shortened version of Budner's Scale for Tolerance-Intolerance of Ambiguity (containing 7 items) is used, based upon analyses reported by Kirton (1981). For the present purposes, we are interested in comparing relatively tolerant versus relatively intolerant Ss. When excluding Ss who score on the average exactly on the midpoint of the scale (n=2), two groups may be formed: group 1, relatively tolerant of ambiguity (n=32), and group 2, relatively intolerant of ambiguity, (n=14). The mean linear trends of these two groups are, respectively, 3.91 and 4.43, of which the difference is in the predicted direction. However, this difference is far from significant: $t_{(44)} = 0.13$ n.s.

Comparable results are obtained for the frequencies of the chosen brands. The mean score of the relatively tolerant group 1 is 1.19, and for the relatively intolerant group II: 2.13. Also here the difference is as hypothesized, but is not significant ($t_{(45)} = 1.05$, n.s.).

Discussion

The results show that the more direct approach to perceived risk is preferable to the one taken in Experiment 4. Yet, the risk manipulation was not totally successful as no difference was generated by the instructions between what was expected to be the low risk- and the medium risk-conditions. To this point we will return later when considering the possibilities for additional research.

Perceived risk differences were not reflected in differences

in (linear) frequency-affect relationships. On the other hand, the risk manipulation did have an effect upon brand selection, brands presumably only differing in previous exposure frequency. The difference between the findings obtained with the two dependent variables is interpreted here as being in correspondence with the functional exposure hypothesis. If S is required to make a choice or, in other words, to commit himself to one particular alternative, the consequence aspect as one of the two aspects of uncertainty/perceived risk is rendered more significant than when S is required to give affect-scores only.

With regard to (in)tolerance of ambiguity it is not possible to supplement the conclusion that the hypothesis was not confirmed with additional considerations as to why this may have been so. In the next experiment, that will be performed because of the promising outcomes and the unanswered questions of the present experiment, this issue will be taken up again.

An important question concerns the lack of a difference in both manipulation checks between the so-called Low Risk- and the so-called Medium Risk-Condition. Looking at the scores of the Ss in the former condition on the manipulation checks, it must be concluded that these Ss did probably experience a Medium Risk situation (for difficulty of choice, the mean score of LR is 2.56 with scale midpoint 3.00; for chance of preferred brand, the mean score of LR is 3.19 with scale midpoint 4.0). Several post-hoc considerations suggest that this conclusion may be a valid one:

- instructions indicate that there are quality differences between the pens;
- Ss are requested to make a selection, without being allowed (explicitly) to try out the alternatives;
- Ss are permitted to change pens around after selecting a pen if they, at second thought, view another pen to be still more attractive. Although this provision was meant to reduce risk, it may not have done so because of at least

two possible reasons:

1) even if, after the choice, another pen would seem preferable, Ss do not want to appear childish or impudent by changing it (the gift !) around. So, the first choice is likely to be experienced as the final choice after all.

2) the mere information that the choice may be reversed may suggest that the quality differences, however small, still are important.

In an additional experiment we may attempt to clarify the points considered here.

4.3 EXPERIMENT 6: FUNCTIONAL EXPOSURE AND PERCEIVED RISK; WITH AN EMPHASIS ON LOW PERCEIVED RISK

The main purpose of the present experiment is to attempt to generate low levels of perceived risk, now that we have succeeded, in Experiment 5, in obtaining medium and high perceived risk levels.

In continuation of the approach taken in Experiment 5, here the experimental situation, the procedure, the nature of the instructions and the type of product involved will be made equal or as much similar as possible to the ones in that experiment. Then it will be permissible to compare conditions of both experiments.

It is assumed that perceived risk may be lowered by attenuating its component 'consequence(s)'. For example, by eliminating S's possibility or requirement to make a choice, thus rendering choice outcome completely beyond his control. Alternatively, by giving S the expectation of an opportunity to actually try out the alternatives, before making a selection, perceived risk may be assumed to be reduced relative to the situation in which there is no such expectation.

In combination with the Medium and Low Risk-instructions of Experiment 5, these two alternative risk-reducing possibilities may be worked out in the following experimental conditions:

1. Low Risk I : Low Risk instruction; choice
2. Low Risk II: Medium Risk instruction; no choice
3. No Risk : Low Risk instruction; no choice.

Together with the Medium Risk Condition of Experiment 5 (Medium Risk instruction; choice), these form a complete 2x2 design.

It is hypothesized that in the no-choice conditions frequency-affect relationships and frequencies of the chosen brand[1] will be nonpositive/small, that is, approximating (slope) zero.

[1] In each condition, Ss will be requested to make a selection anyway, however, but in such a way that the consequence component is not introduced.

Because of the requirement to make a choice, the dependent variables will assume higher values in the Low Risk 1 Condition. However, these will be lower as compared to the corresponding values in the LR- and MR-Condition of Experiment 5. It is hypothesized further that relative intolerance of ambiguity is associated with more positive frequency-affect relationships and with higher frequencies of the selected brand than relative tolerance of ambiguity.

Method

Subjects: Subjects were 16 men and 32 women from various ages and whose names were drawn from the same participants-pool as used for obtaining the names of participants in Experiment 5. Prior to the present experiment they had not participated in an exposure-affect experiment. For their cooperation a gift of an approximate value of *f* 7,50 was announced. Ss were divided evenly over the three conditions: 16 Ss each. No data had to be discarded.

Stimuli and Procedure: see the corresponding sections in the description of Experiment 5.

Instructions

Condition 1: Low Risk I: Low Risk instruction; choice

'This study is on the evaluation of roller pens. These are pens that have features in common with both ballpens and fountain pens. Because they have the advantage of the ballpen and write lightly like a fountain pen it is expected that they will be sold very much in the near future.
The Consumers' Guide wrote about these roller pens - the same as we employ in this study:

> 'All brands of roller pens have passed our test excellently. A bad buy is definitely impossible.'
> (Consumers' Guide, March 1981).

The value of the pens is between 7 and 8 guilders a piece. Later-on we give you 6 pens of different brands. Then, you should try out these pens and subsequently make a selection out of them. You may keep the selected brand. You will have ample time for trying out the pens. In a few minutes we will acquaint you with the brandnames. These will appear on the monitor.

Please read this information once more. Then, please answer the following questions before we start showing the brandnames:'

(The two manipulation checks followed here, together with their alternative answers: choice difficulty and chance of preferred brand; see also p.109-110).

Condition 2: Low Risk II: Medium Risk instruction; no choice

Up to the so-called Consumers' Guide section, instructions are equal to those of Condition 1. Then:

> 'You do not run the chance of a bad buy when purchasing a roller pen. Our test indicated that there are no bad roller pens. Yet, it can do no harm to be somewhat careful when choosing a pen because of the differences in quality. By the way, all pens are approximately equally priced. (Consumers' Guide, March 1981).

The value of the pens is between 7 and 8 guilders a piece. Later-on we give you one of these pens. After you have tried out this pen for a little while, we would like you to answer some very simple (written) questions about it. You may keep the pen that we give you and that is evaluated by you. It is not possible at this moment to indicate which brand that will be because the pens will be distributed completely arbitrari-

ly. In a few minutes we will acquaint you with the brandnames. These will appear on the monitor.

Please read the above information once more'.

(As manipulation checks on risk would be awkward here and possibly counteracting manipulations, they are left out).

Condition 3: No Risk: Low Risk instruction; no choice

Up to the Consumers' Guide section, the instructions are the same as those in Conditions 1 and 2. Then:

> 'All brands of roller pens have passed our test excellently. A bad buy is definitely impossible' (Consumers' Guide, March 1981).

The value of the pens is between 7 and 8 guilders a piece. Later-on we give you one of these pens. After you have tried out this pen for a little while, we would like you to answer some very simple (written) questions about it. (Etcetera)'. (See instructions Condition 2).

For the two no-choice conditions, the brand-selection question was adapted by formulating it as follows: 'If you would have to make a selection yourself now, which brand would you choose then ?'

The rest of the procedure is equal to the one in Experiments 4 and 5.

Results

With the three conditions Low Risk I, Low Risk II and No Risk, it was attempted to obtain perceived risk levels lower than those generated in Experiment 5, Conditions Low and Medium

Risk. The only condition for which this can be checked is the Low Risk I-Condition, of which the instructions announced the request to make a selection. (The manipulation checks employed thus far specifically focus upon the selection).
In Condition Low Risk I (Low Risk instruction; choice) the mean of the variable difficulty of choice is 3.19 on the 5-point scale and the mean of the variable chance of preferred brand is 3.50 on the 7-point scale. It was expected that these means would be lower than the respective means of Conditions Low Risk and Medium Risk of the previous experiment[1]. However, this is not the case. As a matter of fact, the differences are in the wrong direction. The mean difficulty of choice is significantly higher than in the Low and Medium Risk Conditions (respectively $t_{(30)} = 2.04$, $p \leq .05$; $t_{(30)} = 2.04$, $p \leq .05$).(Because of the direction of the differences, one-sided t-test actually do not apply). For the manipulation check chance of preferred brand, differences are not significant (respectively $t_{(30)} = 0.63$, n.s. and $t_{(30)} = 0.56$, n.s.). Assuming that manipulations in the remaining two conditions of the present experiment were successful, it seems justified to adapt the hypothesis in stating that, considering the outcomes on the manipulation checks, we should expect an exposure-affect difference between the Low Risk I Condition on the one hand and the Conditions Low Risk II and No Risk on the other. At the same time, no exposure-affect differences are expected to be observed between the Low Risk I Condition and the Medium Risk Condition of Experiment 5.

Table 26 presents the mean affect-scores per frequency-level and per condition, and, per condition, the sum of the scores transformed by coefficients of orthogonal polynomials (linear trend). See also Figures 12 and 13.

[1] - difficulty of choice: Low Risk: 2.56; Medium Risk: 2.63
- chance of preferred brand: Low Risk: 3.19; Medium Risk: 3.25.

Table 26, p. 202, and
Figures 12 and 13, p. 215 about here

In the three conditions of the present experiment 2 factors are manipulated: choice and type of instruction. The first factor has two levels: choice and no choice, as well as factor 2: Medium Risk instruction and Low Risk instruction. As the Medium Risk-Condition of the previous experiment forms one cell of the resulting 2x2 design, only three conditions had to be made up here. In the analyses we will depart from this design.

An analysis of linear trend shows a significant effect for choice ($F_{1,60} = 4.70$, $p < .05$), but not for type of instruction ($F_{1,60} < 1$, n.s.). Furthermore, there is no interaction-effect ($F_{1,60} < 1$, n.s.). See also Table 27.

Table 27, p. 202, about here

For the dependent variable frequency of chosen brand, the factor choice is highly significant ($F_{1,58} = 13.08$, $p < .001$) and there is a significant choice x type of instruction interaction ($F_{1,58} = 4.81$, $p < .05$). There is no significant effect for type of risk instruction ($F_{1,58} < 1$, n.s.). See also Table 28.

Table 28, p. 203, about here

Below, an overview will be given of the results per factor-level and per cell of the design (insofar as necessary for comparison, the results of the Medium Risk Condition of Experiment 5 will be repeated).
The overview will focus upon the linear trends at first and subsequently on the frequencies of the chosen brands.

Linear trends

The mean individual (linear) trend in the choice-conditions is higher than in the no-choice conditions, as predicted. Means are, respectively, 6.69 and -0.69.
The means of both type of instruction levels are in the predicted direction, Medium Risk instruction: 3.72 and Low Risk instruction: 2.28. However, as the analysis of variance indicates, we should not interpret the difference as supportive of the hypothesis. The means of the three conditions are: Low Risk I (Low Risk instruction; choice): 5.88; Low Risk II (Medium Risk instruction; no choice): -0.06; and No Risk (Low Risk instruction; no choice): -1.31. The mean of the Medium Risk Condition is 7.50.
For the simple interaction effects (slope differences between the four conditions) see Table 29.

Table 29 ,p. 203, about here

Frequencies of the chosen brands

In the choice conditions, the mean frequency of the chosen brand is 2.31[1], in the no-choice condition: -0.33. This difference is as hypothesized. When Ss received a Medium Risk instruction, their mean frequency-score is 1.27, while for the Low Risk Conditions, this score is 0.81. This difference turned out to be insignificant. The risk x choice interaction was significant, however. (See Table 28, p. 203).

Condition-means are: 1.38, -1.0 and 0.25 for the Conditions Low Risk I, Low Risk II and No Risk respectively. The mean of the Medium Risk Condition was 3.25.

1 Mean exposure frequencies are expressed in the coefficients of orthogonal polynomials, see page 59.

Simple effects are presented in Table 30.

Table 30, p. 203, about here

As in the previous experiment the shortened Budner Scale for Tolerance-Intolerance of Ambiguity was used (see also page 113). The mean (linear) trend for Ss scoring, on the average, lower than 4.0 on the 7-point scale (1= very tolerant) is -2.72; the mean for less tolerant Ss, scoring higher than an average of 4.0 is 7.72. The difference is as hypothesized and significant ($F_{1,45} = 7.70$, $p < .01$). Also the difference for frequency of chosen brand is as expected, with means -0.85 and 1.84, but the difference does not reach significance ($t_{(44)} = 0.95$, n.s.).

Discussion

The first observation that has to be made is that, apparently, risk manipulations are somewhat tricky. Theoretically, low risk is not problematic. Operationally, however, it is. The Low Risk I-Condition, deliberately set up to reduce the perceived risk level obtained in the so-called Low Risk Condition of the previous experiment, in fact did not achieve low risk as assessed by the employed manipulation checks. The factor choice appeared crucial for the presence or absence of perceived risk. Perhaps, in the low Risk I-Condition, Ss still did experience the try-out of the 6 pens and the subsequent selection as a task, which would have made the condition more similar to a performance-task condition as referred to earlier than to a nonperformance-task. It must be noted, however, that this post-hoc interpretation is exactly the reverse of the initial interpretation that led to the concerning operationalization.

The results of the low risk conditions further corroborate the hypothesis that positive frequency-affect relationships are less likely under low perceived risk levels as compared to more moderate risk levels.

Because it was attempted, in three of the four cells, to obtain low risk levels, no significant effect for type of instruction was to be expected. Departing from the original hypothesis that supposed low risk in all three conditions of Experiment 6, an interaction-effect should have been observed in the condition-combination MR (Experiment 5) and Low Risk I, with the former having a significantly more positive frequency-affect relationship (as measured by the two dependent variables). Now that the manipulation in the Low Risk I-Condition turned out to be unsuccessful, this hypothesis had to be adapted on the basis of the manipulation checks. In the adapted version, that departs from medium risk levels in both Conditions Medium Risk (Experiment 5) and Low Risk I (Experiment 6), no interaction was expected and observed.

The findings concerning the effects of (in)tolerance of ambiguity are consistent in that the more positive frequency-affect relationships and the higher frequencies of the chosen brands are associated, without exception, with higher intolerance of ambiguity. There is also consistency, however, in that several times the differences fail to reach the required levels of significance. Again, there does not seem to be an obvious reason for this lack of significance. Anyway, the obvious reason does not seem to be that (in)tolerance of ambiguity does not have an effect.

4.4 RESULTS AND DISCUSSION OF EXPERIMENTS 5 AND 6 COMBINED

The various conditions of Experiments 5 and 6 are so similar in terms of type of subjects, stimuli, procedure, location and object of experimental instructions that there does not seem to be more than one basis for distinguishing them: level of perceived risk. Thereby, the conditions of the two experiments may legitimately be considered as actually being part of one single experiment. This makes it possible to combine conditions into risk-levels. Additional analyses may then be performed on larger groups of subjects.
Both experiments provide three conditions, 6 conditions in total. The manipulation checks indicated that one of these generated a high level of perceived risk, that three conditions should be associated with an intermediate risk-level, and two conditions were assumed to be non-risky because of the absence of the necessity to make a choice.

As usual, both individual trends and frequencies of the chosen brand will be the dependent variables in the analyses. Since a curvilinear relationship is expected between perceived risk and the occurrence of positive frequency-affect relationships two separate analyses are performed for each of the dependent variables: one comparing the no risk- with the intermediate risk-conditions and one comparing the intermediate risk conditions with the high risk condition. In these analyses the effect of (in)tolerance of ambiguity will be considered simultaneously.

No Risk versus Intermediate Risk

The average individual trend in the no-risk conditions is -0.69: -2.55 for the tolerant subjects and 3.80 for the intolerant subjects. In the intermediate risk condition-set the mean is 6.02, with respective means: tolerant: 3.57 and in-

tolerant: 10.44.

For trends the effect of risk is significant ($t_{(78)} = 2.18$, $p < .05$) and so is the effect of tolerance/intolerance of ambiguity ($t_{(74)} = 2.12$, $p < .05$, one-sided). For the mean affect scores per frequency-level for tolerant/intolerant subjects see Table 31 and Figures 14 and 15. Table 31 also contains, per group, the sum of the mean scores transformed by coefficients of orthogonal polynomials (linear trend).

Table 31, p. 204, and
Figures 14 and 15, p. 216, about here

The perceived risk x (in)tolerance of ambiguity interaction is insignificant ($F_{1,72} < 1.0$, n.s.). See Table 32.

Table 32, p. 204, about here

A similar outcome emerges for frequency of the chosen brand. The difference between the no-risk- and the intermediate risk-sets is significant ($t_{(75)} = 3.28$, $p < .001$, one-sided) and so is the difference between tolerant and intolerant subjects ($t_{(71)} = 3.14$, $p < .001$, one-sided). Also here, the risk x (in)tolerance of ambiguity interaction is insignificant ($F_{1,69} < 1.0$, n.s.). See Table 33.

Table 33, p. 205, about here

Intermediate Risk versus High Risk

When the set of intermediate risk conditions is compared with the high risk condition, an insignificant difference between individual trends emerges. Yet the difference tends in the expected direction ($t_{(62)} = 1.44$, $p < .10$, one-sided). For frequency of the chosen brand, the corresponding difference is significant, however, ($t_{(61)} = 2.40$, $p < .01$, one-sided). Because of one very small cell it is not meaningful to inves-

tigate a possible interaction-effect. The factor (in)tolerance of ambiguity does not have a significant effect on individual trends ($t_{(60)} = 1.26$, n.s.), but it does on frequency of the chosen brand ($t_{(59)} = 2.63$, $p < .01$; one-sided). No interaction-effect is considered here either.

Because of the large number of subjects in the 6 conditions combined, it is interesting to consider the effects associated with the various scores on the manipulation check 'perceived chance of ability to choose the preferred brand'. Freely translated, this variable is similar to the P_{pos}-variable discussed in Experiment 3: 'the perceived probability of a positive outcome'. For this variable it was predicted that the least positive frequency-affect relationships would be observed under very low and very high probability of a positive outcome, while the more positive relationships were expected for the more intermediate probability levels, with the most positive relationship in the upper half of the probability-range (between $P_{pos} = .50$ and $P_{pos} = 1.0$).
For sake of clarity the seven points on the chance (of a preferred brand) scale will be repeated here: 1= very large (chance); 2= large; 3=rather large; 4= neither large nor small; 5= rather small; 6= small; and 7= very small. On the basis of arguments presented in connection with Experiment 3 we should expect nonpositive frequency-affect relationships to occur at both extremes and positive relationships around the scale midpoint. The most positive relationships should be observed in the rather large and large change region. The distribution of positive frequency-affect relationships should, therefore, be negatively skewed towards the small chance region. The validity of these expectations can be tested only partially because of two very small and one empty cell. Only 4 subjects indicated to perceive a very large chance; 5 subjects perceived their chance of a preferred brand to be '6': small. No subject perceived this chance to be very small ('7'). Even though cell-means are indicative at best, it is interesting to note that the pattern of means follows,

more or less, the expected skewed distribution of positive frequency-affect relationships. The consecutive means of individual trends are (starting with score 1: very large chance, with the respective n's between brackets 0.50 (4); 6.75 (8); 5.83 (18); 6.41 (17); 0.90 (10) and 4.40 (5). For frequency of the chosen brand these means are: -1.00 (3); 3.50 (8), 1.89 (18); 1.35 (17); 0.20 (10) and 1.00 (5). Considering the number of subjects and the number of scale-scores the most appropriate analysis seems to be one on the difference between the combination of data associated with scores 2 and 3 on the one hand and the combination of data associated with scores 5 and 6 on the other. For individual trends, this difference is not significant ($t_{(39)} = 0.96$, n.s.) but for frequency of the chosen brand the difference does reach significance ($t_{(39)} = 2.11$, $p < .05$).

4.5 EXPERIMENT 7: THE PLACE OF THE RISK-MANIPULATION RELATIVE TO THE EXPOSURE-MANIPULATION

The six experiments reported thus far have been presented in their chronological order. After completing Experiment 6, the present author received a published comment after a congress-presentation and publication on Experiment 1 (Poiesz, 1981). The comment is not specifically related to Experiment 1 only, however, and therefore may be discussed here.
The comment (by Sawyer, 1981) states that, as 'Poiesz's functional exposure construct seems very similar to past manipulations of intentional versus incidental learning' (p. 440), (...) it seems very likely that the operational manipulations in the various experimental conditions do not just manipulate uncertainty or functional exposure but also motivation to process and/or extent of processing. Indeed, these concepts may be irrevocably intertwined' (pp. 440-441).

Two considerations seem worth mentioning:

- Even if processing intensity would be the actual crucial explanatory factor, it still remains necessary to indicate what (consumer) conditions give rise to different levels of processing intensity. Explanations that directly focus at and operationalize such conditions, such as the functional exposure hypothesis attempts to do, should be considered more parsimonious.
- With increasing uncertainty/perceived risk information processing may be expected to intensify. No such positive linear relationship is expected in connection with the occurrence of positive frequency-affect relationships/functional exposure. Under conditions of high perceived risk high intensity information processing is then co-occurring with nonpositive frequency-affect relationships.

In short, the functional exposure hypothesis does not presuppose or require (a) particular information processing intensity level(s).

Yet, it may prove useful to subject this latter argument to an empirical test, also because in the more realistic consumer situations, information processing often is less intense as compared to laboratory situations in which subjects are placed a few feet away from a screen and are instructed to carefully watch the stimuli to be exposed on it.
In order to assess the impact of processing intensity the following experiment is set up.
From the previous experiments three conditions are selected, varying in level of perceived risk: one high risk-, one medium risk-, and one low risk-condition. These three conditions are exactly replicated with one exception: instructions regarding the risk-levels are presented after the exposure-manipulation. In this way, any information processing intensity differences are not attributable to risk instructions, so that risk is not confounded with information processing intensity.
If the replication is carefully done, we may depart from a 3x2 experimental design, 3 risk levels x 2 place of risk-manipulation levels (before and after; the before-conditions already have been reported).
It is hypothesized that there is no main effect of location of instruction and that the risk manipulation does have the effect as we may expect on the basis of the hypotheses and findings presented earlier, also in the conditions in which the risk manipulation follows the exposure manipulation. That is, we expect no or less positive scores on the exposure-affect dependent variables in the low and high risk conditions as compared to the more positive scores in the medium risk condition. The two dependent variables are, as usual, the linear trends and the frequencies of the chosen brand.
In addition, no significant risk x location of instruction interaction is expected.
The information processing intensity related outcomes of the present experiment will be interpreted as generalizable to Experiment 1 and thereby as reacting to Sawyer's (1981) suggestion. (Note that the risk notion was derived directly from

the uncertainty notion as employed in Experiment 1).

Because of the somewhat ambiguous role of the variable (in)tolerance of ambiguity in previous experiments, it will be assessed in the present experiment as well. Again, we hypothesize that the more positive scores on the exposure-affect dependent variables will be observed in the group of the relatively intolerant subjects.

Method

Subjects: 39 persons, 16 men and 23 women were requested to participate in the present study. Their names had been sampled from the same subject-pool as the one employed for earlier experiments. All subjects provided the necessary data and there were no suspicious subjects. Everyone participated for the first time in an exposure-affect experiment. A gift worth approximately *f* 7,50 was announced in return for their cooperation.

Stimuli: see the corresponding section in the description of Experiment 5.

Procedure: Three conditions were partially replicated in this experiment: the No Risk-Condition (Experiment 6), the Low Risk Choice Condition (Experiment 6) and the High Risk Condition (Experiment 5). These conditions may be interpreted, on the basis of the earlier manipulation checks, as being low, medium and high risk conditions, respectively.
The procedure differed only with respect to three interrelated details from the corresponding procedures in the two experiments:

1) the exposure manipulation took place before instructions with risk manipulations were handed out;
2) in order to avoid a 'conventional' mere exposure experiment with unfamiliar stimuli in the absence of any instructions

prior to exposure (see also page 34), the exposure phase was introduced as 'a mere presentation of brandnames such as those of products that we will refer to later'; and

3) the instructions had to be adapted slightly because of point 1. Rather than: 'in a few minutes we will acquaint you with the brandnames', etc., the concerning sentence read: 'You just have been able to acquaint yourself with brandnames, etc. See Instructions.

Instructions

Except for the slight modification just described above, instructions are equal to those reported earlier in combination with the respective conditions. For sake of clarity, only the most essential elements in these instructions will be indicated.

Condition 1: No Risk'[1]

- the usual introduction of roller pens
- Consumers' Guide: '(...) a bad buy is definitely impossible'
- we give you one of the pens
- you evaluate this pen, after a try-out, by answering simple questions.

Condition 2: Medium Risk'

- the usual introduction of roller pens
- Consumers' Guide: '(...) there are some quality differences, but a bad buy is definitely impossible'
- we give you 6 pens
- you try them out and select one pen, which you may keep.

[1] The accent is added to distinguish the three conditions here from the comparable previous conditions in earlier experiments.

Condition 3: High Risk'

- the usual introduction of roller pens
- Consumers' Guide: '(...) In all, a very risky product'.
- you may select one of the 6 pens. Trying them out first is impossible. You may keep the selected pen.

Results

Manipulation checks were obtained for the Conditions Medium Risk' and High Risk'. Manipulations were not checked in Condition 1 (Low Risk') for the same reason as indicated in the No Risk Condition of Experiment 6 (see page 119). Differences were as expected with means for the variable difficulty of choice: 2.85 in the Medium Risk'-Condition and 3.46 in the High Risk'-Condition. The difference tends toward significance ($t_{(24)} = 1.34$, $p < .10$, one-sided). For the manipulation check: chance of the preferred brand, means are, respectively, 3.62 and 4.85, which also differ in the right direction (significantly, $t_{(24)} = 1.91$, $p < .05$, one-sided).

It was hypothesized that no differences will be observed between conditions differing only in the place of the risk-manipulation: before or after the exposure manipulation, and that, on the basis of previous hypotheses and findings, a significant main effect will be observed for the factor perceived risk; in the No Risk'- and the High Risk'-Condition no or less positive effects of exposure on affect are expected than in the Medium Risk'-Condition.

Linear trends

For the mean affect-scores per frequency-level and per condition, and for the sum of the transformed scores per condition, see Table 34 and Figures 16 and 17. In Table 35 it can be seen that there is a effect for the risk factor ($F_{2,81} = 4.69$, $p < .05$) with means for the three risk levels Low: -0.04; Medium:

7.06 and High: 0.26; differences are in the expected direction. There is no significant main-effect for place of instruction, as expected, and no risk x place of instruction interaction

Tables 34 and 35, pp. 205-206, and
Figures 16 and 17 p. 217, about here

The means of the three risk-after-exposure conditions are 1.23 (Low), 8.23 (Medium), and 0.08 (High). The difference between the Low Risk'- and the Medium Risk'-Condition is not significant but shows a tendency in the predicted direction ($t_{(24)}$ = 1.35, $p < .10$, one-sided); the difference between the Medium Risk'- and the High Risk'-Condition is significant at the 5%-level ($t_{(24)}$ = 1.86, $p < .05$, one-sided). As expected, there is no difference between the two extreme conditions ($t_{(24)}$ = 0.05, n.s.). Also, there are no significant risk x place of instruction interactions when the 3x2 design is split into two 2x2 designs (resp. Low/Medium risk x place of instruction and Medium/High risk x place of instruction). The F-values of the respective interactions are: $F_{1,54}$ = 0.00 and $F_{1,54}$ = 0.14.

Frequency of the chosen brand

A 2x3 analysis of variance on the effects of the two factors place of instruction (2) and perceived risk (3) indicated no significant effect of either factor nor for the interaction-component (all F-values < 1.0). That no significant effect was observed for place of instruction is in accordance with the hypothesis. However, the absence of an effect of the risk factor is not. As may be expected on the basis of this result, risk does neither have an effect if the analysis is limited to differences between conditions with the risk manipulation after the exposure manipulation ($F_{2,33} < 1.0$) with cell-means: Low Risk': 0.85; Medium Risk': 0.82, and High Risk': 1.17. Note that the differences between the means are in the wrong direction.

With regard to (in)tolerance of ambiguity, frequency-affect relationships (reflected in the two dependent variables) were expected to be more positive for the more intolerant Ss. However, no such difference is found. For both linear trends and for frequency of the chosen brand the effects are insignificant, with differences between the cell means in the unexpected direction (linear trends: mean tolerant is 4.09 and mean intolerant: 2.36; frequency of chosen brand: mean tolerant = 2.00 and mean intolerant = 0.00).

Discussion

Even though the place of instruction manipulation failed to have a significant effect, it did affect the differences between the three risk levels for frequency of the chosen brand.
There are, at least, two explanations for this effect, one of which might be the one concerning the mediating role of information processing intensity as discussed (and questioned) in the introduction to this experiment. Yet, this explanation would be inconsistent with the differences that were found for the linear trends. The other possible explanation centers on the nature of the experimental situation and course of experimental events as perceived by the subjects. We will elaborate on this latter possible explanation briefly here.
Ss were requested to watch a series of slides depicting unfamiliar brandnames such as those of products to be shown later. Subsequently, instructions do inform Ss that the slides contained brandnames of roller pens and request them to respond by evaluating and selecting out of these pens. After these instructions, Ss may have wondered about the timing of the exposure-phase and, simultaneously, about the reason for it - why not tell me beforehand what it is all about ? This question would probably be even more pregnant for the choice than for the affect-ratings. Post-hoc it does not seem un-

likely that the procedure did affect the credibility or importance of the risk instructions in a negative sense, which, in its turn, would explain why the hypotheses were only partially confirmed. This possible explanation, if valid, might then also account for the lack of difference between tolerant and intolerant Ss. In short, the partial confirmation of the hypotheses does not necessarily question the effect of perceived risk on frequency-affect relationships as was observed repeatedly in previous experiments. The major goal of this experiment was to find out whether place of risk manipulation does have a significant main effect or a significant interaction effect with risk. Apparently, neither of these effects were observed, and we may conclude that it does not make much difference whether the risk manipulation does take place before or after the exposure manipulation. We should add immediately, however, that the size of the time-interval between the exposure- and the risk manipulation may be just as, or even more important when the risk manipulation follows the exposure manipulation than when the manipulations take place in the temporal contiguity of each other.

4.6 GENERAL DISCUSSION OF THE LABORATORY EXPERIMENTS

After having found evidence in support of the functional exposure hypothesis in the laboratory with its convenient opportunity to control for the unwanted influence of possible extraneous factors that may compete with the exposure manipulation in forming (i.c. consumer) affect, it is legitimate and necessary to subject the hypothesis to a more real life test. This does not mean, of course, that all possible questions regarding frequency-affect relationships in the laboratory have been answered or even considered. However, at some point in a research program, it becomes desirable to check the external validity of the laboratory findings. This point is a rather arbitrary one and is highly dependent upon the goals of the individual researcher. One of the goals here is to better understand and predict frequency-affect relationships in the area of real life consumer behavior, which, of course, are more adequately investigated in the field, laboratory research having provided a theoretical basis for these relationships. Thus, when moving into field research, it is necessary to keep in mind conclusions and suggestions that emerge from the results obtained through laboratory research. Let us therefore conclude the lab-research (provisionally ?) by summarizing these conclusions and suggestions briefly. The more critical conclusions are concerned with the functional exposure hypothesis and the experimental hypotheses derived from it. It is possible to distinguish between conclusions regarding the subjects' behavior in the social psychological experiments and those relating to behavior in the more consumer behavior oriented experiments. The former conclusions have been summarized previously on page 87 and amount to the main conclusion that the slope of frequency-affect relationships is systematically related to the subjects' uncertainty. More specifically, the most positive frequency-affect relationships are to be found under conditions of moderate uncertainty as opposed to certainty. Because of the theoretical overlap between the concepts uncertainty and

perceived risk, the latter term being used more exclusively in the area of consumer behavior, the conclusions regarding the relationship between the slope of frequency-affect relationships and perceived risk are highly similar to the conclusions on the effects of (un)certainty: the most positive frequency-affect relationships are to be found under conditions of moderate as opposed to extreme perceived risk ('extreme' meaning either very high or very low).
The two general conclusions converge into the overall conclusion that the functional exposure hypothesis does apply in a laboratory setting. To the extent that high(er) exposure frequencies may be assumed to have some function that low(er) exposure frequencies do not have, these high(er) exposure frequencies will be associated with positive affect. In the experiments, this function is best described in terms of uncertainty-reduction / the reduction of perceived risk.
The experimental manipulations of uncertainty and perceived risk produced findings with which the validity of the functional exposure hypothesis could be established. However, the many instances in which these manipulations had to be adapted in order to be effective or in which internal analyses replaced analyses on the basis of external manipulations only, indicate that uncertainty- and perceived risk-levels are not easily operationalized. In the case of perceived risk, for example, the risk-dimension had to be stretched considerably in the low risk direction before the level of perceived risk was effectively reduced. For field research this means that it will be most efficient to use as much as possible the manipulations that produced the clearest effects in the laboratory, rather than finding new ways to manipulate perceived risk.

In the more recent experiments two dependent variables concerning the frequency-affect relationship were assessed: the set of affect-scores given by the subject to stimuli differing in exposure frequency, and frequency of the stimulus (i.c. brand) selected by the subjects. Usually, the data obtained

with the latter dependent variable were more clearly in line with the hypotheses than those obtained with the former. Possible reasons for this have been discussed earlier (see page 114). It seems preferable, for the field experiments, to deal exclusively with the variable frequency of the chosen brand, not only because of its more pronounced effect but also because of its relatively greater similarity with brand evaluations taking place in real life as compared to the variable for which it is necessary to evaluate all alternatives consecutively in a short time-period.

In the field experiments the same type of stimuli will be used as in the experiments of Chapter 4: roller pens with unknown brandnames - being the names of French hamlets. This is a choice out of convenience, no systematically different effects in terms of the functional exposure hypothesis are expected for different generic stimuli and different names. We should note that in the course of the research so far, three types of stimuli were used: paralogs, drawings of pens, and French names, and that the type of stimulus did not necessitate the use of interpretations other than the functional exposure interpretation.

In conclusion, for theoretical reasons and reasons of efficiency and convenience, the field research will depart from the same type of risk manipulation, the same type of product and the same type of stimuli (brandnames) as have been employed in the laboratory research. Effects of exposure frequency will be assessed by the dependent variable frequency of the chosen brand only.

5. FUNCTIONAL EXPOSURE AND CONSUMER BEHAVIOR; SOME FIELD EXPERIMENTS

It is the purpose of a field experiment to introduce factors that in their possible effect on the behavior under consideration may compete with the factors manipulated by the experimenter and/or to exclude laboratory-bound effects on behavior such as the subjects' knowledge of being part of an experimental set-up. Thus, a field experiment may allow the researcher to assess the external validity of hypotheses and findings obtained in the laboratory.

'By laboratory experiment is meant the conscious manipulation of one or more independent variables and registration of the effects in a setting that allows for the control of independent variables and potentially disturbing influences. A field experiment has the same characteristics, but the realistic setting usually permits less control of disturbing factors.' (Wärneryd & Olander, 1972, p. 128). Thus, there is not necessarily a sharp distinction between a laboratory- and a field-experiment. Basically, a field experiment may not imply more than a researcher carrying out his research in the subjects' environment rather than subjects behaving in an environment that is more exclusively the researcher's: the laboratory. However, when leaving the laboratory, the researcher is more likely to decide for something more than only marginal adaptations of the laboratory experiment. With such marginal adaptations he would be capable of closely following the effect of the introduction or the exclusion of each additional factor. However, substantial progress in the research program would be unlikely and money- and time-investments would be high. On the other hand, if the researcher chooses to include or exclude several factors simultaneously he will run the risk of having no unambiguous explanation available if the field-findings turn out differently than hypothesized. Of course, if the results are as expected no unnecessary time and money are lost in the external validation process.

There are no objective criteria for the number and type of variables a researcher may allow to affect his data per step in the validation process, which renders it important that he not only reports his decision but also the underlying justification.

Although, in the literature, a number of field experiments on exposure effects are reported (Stang, 1977; Crandall, 1972; Harrison, 1969; Zajonc & Rajecki, 1969; Rajecki & Wolfson, 1973), it does not seem useful to present here a detailed description and interpretation of the findings obtained in these experiments. First of all, 'mere exposure' field experiments primarily depart from and report about one independent variable only: the frequency of exposure, so that the methodological information provided is too limited to assess the possible applicability of a functional exposure interpretation. For example, information on the subjects' uncertainty or perceived risk is often not provided and neither is sufficient information on the field conditions so that post-hoc interpretations in terms of uncertainty can not be made.

Secondly, in most of the reported field experiments exposure frequency is confounded with other factors[1], thus not allowing general conclusions on the frequency-affect relationships in the field. Thirdly, for theoretical and practical reasons, it possibly may be that field experiments on frequency-affect relationships are considered to be of interest by researchers and publishers only if these relationships turn out to be positive. This, if true and if reflected in a bias in the literature toward positive relationships, would make it hazardous to rely upon the findings of reported field experiments.

[1] For example, research on the effects of repetitive advertising does not apply. Belch's (1982) remark that 'mere exposure theory may have limited relevance to the attitudinal effects of persuasive message repetition, as this model applies primarily to simple nonassociative stimuli' (p. 56) may be stated in the contrary direction as well if an advertisement may be interpreted as a complex associative stimulus.

In the present context a decision about a field experiment should focus upon the effect that such an experiment should preferably have on the nature of the two principal manipulations employed in the laboratory experiments: the exposure frequency- and the perceived risk manipulation. Considering the first of these, one of the most notable dinstinctions between the exposure differences in the laboratory and exposure differences in the field is that in the laboratory, the manipulation is not unobtrusive.
It is decided here to set up a field experiment with an unobtrusive exposure frequency manipulation, that is, a manipulation not interpreted by the subjects as being part of the experiment in which they participate. It is decided also to not basically change the nature of the risk manipulation as this, in combination with the different exposure frequency-manipulation, might involve too much loss of control over operating factors.

For rendering the exposure frequency manipulation unobtrusive, a number of measures must be taken. These measures, their underlying reasoning and their intended effect will be discussed here rather than in the method-section of the field experiment, considering that the points to be discussed are more theoretical than strictly methodological in nature.

It is assumed here that the frequency manipulation may be rendered unobtrusive by taking the following measures:
- (Potential) subjects are approached with a request for participation after the exposure manipulation;

(and, in order to avoid that at the moment of behavioral assessment subjects see the link with the previous manipulation:)
- there is only one non-zero frequency-level per (group of) subject(s);
- the stimulus, during exposure, is kept as little extraordinary or (second) thought-provoking as possible;

- affect toward the stimulus is assessed with one choice-question only, embedded in other questions so as to avoid that the affect-question is viewed by subjects as the researcher's main or sole point of interest.

5.1 FIELD EXPERIMENT 1 (EXPERIMENT 8)

For the experiment a 2x2 design will be employed, with the factors exposure frequency and perceived risk. The factors each will have two levels, respectively: zero weeks and one week during which exposure may take place and no risk versus medium risk. If the stimulus is exposed at entrances of two schools, and if we may assume 1) that students of both schools attend courses five days per week and 2) that, on the average, a student enters his school about 1½ times per working day, one week of exposure opportunities is equivalent to about 7 or 8 exposures.

In the exposure-phase, each subject will be exposed to one stimulus. The students of one school will be exposed to stimulus 1, students of the other school to stimulus 2[1].

Subjects will be requested to indicate their preference for either one of two stimuli: the one they have been exposed to in a period of one week or the one they have not been exposed to.

All subjects are requested to indicate their preference for either stimulus 1 or stimulus 2. Half of the subjects receives the no risk instruction; the other half receives the medium risk instruction.

In line with hypotheses and findings reported earlier in the section on the laboratory experiments it is hypothesized that when subjects are requested to choose either the exposed or the non-exposed brand(name), more preference for the former will be observed in the medium risk condition than in the no risk-condition.

Method

Subjects: 80 subjects are recruited (after the frequency-

[1] Geographically, the schools are far away enough from each other to safely assume zero exposures to the other school's stimulus.

manipulation) from two educational institutes: the School for Journalism and the Moller Institute, both in Tilburg, 40 subjects per school. The response-rate after 1 week was 58 per cent (for the respective schools: 50 and 65 per cent). The data of 2 subjects, who returned their questionnaire more than 1 week after the frequency manipulation, were excluded from the analysis, considering that beyond this somewhat arbitrary point memory effects might become too large a factor.

Stimulus-material and procedure

Two stimuli were employed that were also part of the stimulus-set in the laboratory: TRESSON (exposed at the Moller Institute) and VERGONS (exposed at the School for Journalism). In order to avoid subjects wondering about these stimuli, they were presented on a 5x7 inch card containing the following hand-written announcement[1]:

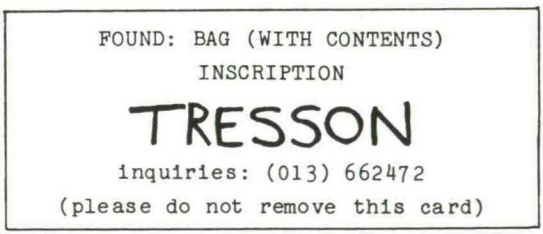


Figure 18: Stimulus-card field experiment 1.

[1] Originally, exactly the same manipulation was intended and tried out in appartment-buildings. Stimulus-sheets were taped onto the window in the main entrance-doors of some of the largest appartment-buildings in Tilburg. The affect-assessment would be equal to the one in the present experiment. However, without exception, and repeatedly, the sheets were removed within one day by the respective caretakes. If the researcher would have persisted in attaching the sheets, these caretakers eventually would have made very nice subjects. For various reasons, this possibility as well another attempt to approach occupants of appartment-houses was abandoned.

The card displayed on the front door of the School for Journalism contained the name 'VERGONS'. For the rest, the card is equal to the one in Figure 18.
At both schools, the card was taped at eye-level to a window in the main entrance. After one week, they were removed. Then, 80 envelopes with a letter, a questionnaire and a return-envelope were handed out randomly to students. In the enclosed letter they were requested to participate in the present investigation concerning media habits. Questions 1 through 7 dealt with the subjects' media habits. Together with question 8 and 9 (presented here without the possible answers) they served as an introduction to the critical question 10.

'8. In which of the 4 media do you find the most interesting consumer information ?

9. Here you see the names of a few products. Please write the brandnames next to them that come first to your mind.

10. About a recently introduced product, a new type of pen, the various media indicate that, when purchasing this pen, there is no chance of a bad buy. However, one is advised to be careful when choosing such a pen because of quality differences between the brands. Imagine that you, for some reason, would <u>have to</u> select one of the two brands (even though you do not know them actually). Which brand would you then choose at first sight?' Two alternatives were indicated: VERGONS and TRESSON.

With this latter question the effect of exposure frequency upon affect or preference was assessed. The total amount of space in the questionnaire was not notably different from that taken up by some of the other questions. However, the amount of text was (which was unavoidable). The medium risk variant of question 10 has just been described. The no risk variant was as follows:

'10. About a recently introduced product, a new type of pen, the various media indicate that when purchasing this pen, there is no chance of a bad buy. The two available brands both passed the quality-test excellently. (By the way, the

price of both brands is the same). Imagine, that you, for some reason, would have to select one of the two brands (even though you do not know them actually). Which brand would you then choose at first sight ?' Also here, the 'brandnames' VERGONS and TRESSON were presented.

The questionnaire, for both medium and no risk continued with questions 11 through 13:

'11.Did you encounter any (or both) of these brands before ?
12.If you did, was it in one of the media ?
- And if so, where ?
- If not in the media, where then ?
13.Do you have any remarks ?

The last question was intended to allow any suspicious subject to indicate the relationship that s/he presumed between the 'bag-note' and the questions 10, 11 and 12.
The accompanying letter requested participants to return the questionnaire as soon as possible.

Result and discussion

None of the subjects indicated to have seen the concerning brandname before (questions 11 and 12). The answers to question 13 provided no evidence for any suspiciousness.

Of the 23 subjects in the no risk condition 9 chose the exposed brand(name). Of the 23 subjects that had received the medium risk information, 13 chose the exposed brand(name). Although this result is in the hypothesized direction, a test on the difference between proportions (i.c. .39 and .57, respectively) shows that the difference is insignificant (z, corrected for continuity, is 0.95, p = .17), and indicative at best.

Without the more extensive control over operating factors as is possible in the laboratory, there may be many possible

explanations for the absence of a significant effect. It is the function of this discussion to identify the most likely explanatory factors so that, in a new field experiment, these may be taken into account. In this respect, a close inspection of what seem to be the most noteworthy differences between the laboratory experiments and the field experiment may turn out to be fruitful. This inspection will focus primarily upon the two main independent variables in both types of experiments: exposure frequency and perceived risk.

With regard to the first of these we must note that, without the possibility of a manipulation check[1], there is no guarantee that the cards were in fact noticed and repeatedly observed. On the other hand, the distinction between exposure-levels is a very crude one - exposed versus non-exposed - so that it seems safe to conclude that the exposure manipulation effectively differentiated exposure-levels. However, no assumption can be made with regard to the number of exposures in the non-zero exposure frequency level.

One more aspect of the exposure manipulation should be noted as being different in the field experiment: the stimulus processing intensity. On the basis of the results of the previous laboratory experiment and those of the present field experiment one may wonder whether the present exposure manipulation would have had a more pronounced effect if the stimulus, at each exposure, would have been attended to more closely. It is obvious that with repeated exposure, the stimulus (especially one containing information about a found item) will receive less attention in the field than in the laboratory in which it is part of the intended experimental environment.

With respect to the other independent variable, perceived risk, one of the distinctive features of the present field experiment relative to the laboratory experiments is that the

[1] Questionnaire-question 11 on whether the brandname had been noticed can only be taken as a manipulation check in case the answer is affirmative, assuming that a no-answer may not be valid by the possibility of low-involvement/unintensive processing.

negative consequence of the choice is inherent to the choice itself and not to the consequence of the choice: in the laboratory, subjects in fact received the item chosen for, so that any nonpositive characteristics would be experienced personally, while in the present field experiment this obviously was not the case. Subjects actually did not even know criteria by which to judge the quality of their choice.
A difference that may be unimportant but that needs to be mentioned is that the media were indicated as the source of the risk information rather than the 'Consumers' Guide'. There possibly may have been a difference in source credibility. To eliminate this possibility in a next experiment, we will return to the 'Consumers' Guide' when operationalizing perceived risk.
Another difference with the previous experiments is that, at the time of exposure, Ss were unfamiliar with whatever the name 'TRESSON' or 'VERGONS' stands for. Also this difference will be eliminated in a next experiment by reintroducing the reference to the concerning product (pens). Apart from these probably only minor changes, in a subsequent field experiment we should incorporate three factors which are called for by the conclusions and observations made above. The first two of these are obvious: exposure frequency and perceived risk, the latter factor adapted so as to imply a personal experience with the consequence of the choice. One additional factor may possibly help clarify why the data of the presently discussed field experiment did not confirm the hypothesis: level of attention or the perceptual emphasis placed on the exposed stimulus.

FIELD EXPERIMENT 2 (EXPERIMENT 9)

The theoretical background of the second field experiment was already provided and evaluated in the introductions to and discussions of the earlier experiment and therefore need not be reconsidered. The various arguments and observations led to the suggestion that in a new field experiment three factors preferably should be incorporated: exposure frequency, perceived risk and level of attention. By employing two levels for each of these factors a complete 2^3 experimental design may be formed. The levels of the respective factors are: for exposure frequency: 1 and 7 exposures; for perceived risk: no versus moderate risk; and for level of attention: elaborate versus limited attention. In Table 36 the design is displayed.

frequency / att. / risk	1 exposure		7 exposures	
	no risk	risk	no risk	risk
elaborate attention	1	2	3	4
limited attention	5	6	7	8

Table 36: experimental design of the second field experiment. The numbers refer to the experimental conditions.

The dependent variable will be the frequency of the chosen brand if Ss are requested to select one out of two brands /brandnames) which they will receive as a gift for their participation. Hereby, the consequence aspect of risk is reintroduced - Ss are assumed to expect to be confronted with the consequences of their choice.

Two control conditions will be employed to check the baselevels of the dependent variable: Condition 9 (0 exposures, no

risk) and Condition 10 (0 exposures, risk). These two conditions will be merged into one control condition if they produce similar results.

With regard to the three factors it is hypothesized that exposure frequency and perceived risk interact in accordance with the hypotheses of previous exposure experiments: if a choice between two alternative brands takes place under moderately risky conditions, a stronger preference will be displayed for the alternative with the more frequently exposed (brand)name than under riskless conditions. It is hypothesized, furthermore, that this interaction will be stronger when the exposed brandnames are elaborately attended to than when they receive only limited attention.

Method

Subjects: Participants were 98 men and 93 women, whose names were taken from the pool of research participants referred to earlier. No subject participated in exposure research before. In a letter from the present researcher, Ss were requested to participate in a telephone survey on 'a comparison between three[1] free advertising newspapers' (papers with heavy advertising and limited editorials), distributed to every house in the Tilburg area on a weekly basis. A specific date and time for the telephone call was announced in this first letter, as well as a present worth about *f*. 5,-- in return for participation. Reply forms and postage-free return-envelopes were included for those wishing to change date/time. One week before the telephone contact Ss received a second letter confirming the appointment, with information regarding the specific issues of the papers that would have to be saved for the interview and with a small closed envelope with a sticker

[1] three instead of one to avoid a special emphasis on the critical paper, which might affect experimental manipulations.

on both sides saying 'Please do not open. See letter'. (In the letter, the Ss were required 'not to open the small envelope in the interest of the research until the caller asks you to'). For the purpose of this, see Procedure.
A total number of 191 Ss were contacted by telephone out of the 240 persons receiving the first letter. This amounts to a gross response rate of 79%. The net response was 183 persons (76%). The data of 8 persons had to be excluded from the analysis as these persons indicated to see the relationship between the exposure manipulation and the dependent variable or failed to follow critical instructions.

Stimuli: Ss had to make a choice out of two alternative brands. The two brandnames were the same as those employed in the previous study: TRESSON and VERGONS, which were presented as the brandnames of pens. One of these stimuli, TRESSON, appeared in one of the advertising newspapers, 'Stadsnieuws' (No. 55, February 2, 1983, circulation 67.000) in the form of an advertisement - a 3.8 x 3.8 cm. frame with the name TRESSON placed diagonally from the lower left to the upper right corner. Below the brandname, the type of product (pens) was indicated in smaller letters (see Figure 19).

Figure 19: the advertisement in the Stadsnieuws paper of February 2, 1983

This advertisement was placed 7 times in the same issue of the paper, on pages 2 and 12 two per page and on pages 4, 14 and 18 one per page[1].

Procedure

All persons were called on the agreed date and time, about 25% of them in the evening. Three women, all three experienced interviewers, made the telephone calls on three separate locations.

The procedure will be described below. This procedure, and thereby its description, will be rather complex: a field experiment on exposure effects calls for a number of particular procedural measures and so does an experiment by telephone. These research options combined into a field experiment on exposure effects by telephone implies a number of measures whose intended effect may be contrary to the effect intended by other procedural measures. In other words, the present description of the procedure will, to some extent, have to deal with the handling of unintended side-effects produced by particular measures, possibly counteracting the intended effects of other measures. In an attempt to avoid unnecessary complexity the telephone interview will be described for one condition only (Condition 1) and explanations of and reasons for particular elements in the procedure will be provided immediately between brackets. For the remaining conditions, deviations relative to Condition 1 will be provided consecutively.

[1] Actually, 10 ads were ordered with a maximum of one ad per even-numbered page. Somehow, this order was partially ignored by the paper.It was decided not to cancel the planned experiment, however, as these changes were considered not critical (however unfortunate) and as all Ss were already recruited.

Telephone interview Condition 1 (elaborate attention, 1 exposure, no risk)

After the conventional introductory statements, checks and questions, Ss in this condition receive the following instruction:

'Please put the Stadnieuws in front of you, closed and back page on top. (Ss will have to be confronted with one TRESSON-ad only. Turning from the front page to page 2 implies 2 exposures. Proceeding to page 4 (1 exposure) implies the possibility of 'meeting' the two ads on page 2 on the way. The only alternative is to turn pages in the contrary direction and direct Ss to page 18 with 1 ad. See also footnote 1, page 153).

We would like to ask you some questions about the advertisements. In a moment I will mention a particular page-number. Then, you proceed to that page and watch all advertisements on this page, together for 15 seconds. In these 15 seconds, you should get a global impression of the ads, that is, you should not read all the details. After these 15 seconds I will mention another page-number and you also watch this page for 15 seconds. Etcetera. (Even though Ss in this condition would be asked questions about 1 page only, reference was made to more than one page so as not to confound exposure frequency with level of attention here - if Ss know that only one page is critical they might consider it with special emphasis).
Then, I will ask you some questions. Is it clear or do you want me to explain it again? (-). Now please turn the pages back to page 18.
(After 15 seconds Ss receive a question which serves two functions: 1. it increases the total number of questions (filler question), thereby reducing the relative number of questions regarding the main dependent variable, which, in its turn, reduces the probability of suspicion; 2. it allows for a check

whether the TRESSON-ad had been noticed). Please close the paper and lay it to the side. Can you tell me now which ads you can remember ? It is not necessary to describe them in detail'. S replies.
'Now the following. Enclosed with the second letter that we did send you was a small closed envelope. You have it ? (-). Did you open it ? (-). (For those subjects not having the envelope the procedure was slightly adapted; Ss who had opened the envelope in spite of the instructions on the envelope were told that further questions would be irrelevant, were thanked for participating and the interview was ended). Please open the little envelope and take from it the form without the staple. This form contains a list of 15 numbered products. Can you mention the numbers of the ads that you have encountered?' (Also this question served two functions: 1. to increase the total number of questions - see earlier - and 2. to keep Ss from wondering about the secrecy ('do not open') around the also enclosed paper with 2 brandnames of a product that will be received as a gift for their participation (see later). With particular products mentioned on the enclosed list, Ss' questions regarding the secrecy were more likely to focus on this list rather than on the brandname sheet, especially as they had been asked previously which products they could remember spontaneously). S replies.
'Well, these were all the questions. Did you find them hard or easy ? (This statement was inserted to reduce the probability that Ss would consider the 'gift question' as the critical question). Then, we should arrange something about your gift. This gift is a new type of pen. We have two brands of it. After you have chosen one of them, we will send you the chosen brand by mail. Let me tell you a little bit more about them. The Consumers' Guide wrote: 'all brands have passed our test equally well. They are all excellent. Also, prices do not differ so that a bad buy is definitely impossible'. (This was the risk instruction, no risk level. It must be mentioned that no Consumers' Guide ever contained such an evaluation). Now take the folded and stapled form out of the little envelope

that you just opened and open it. There are two brandnames on it. (As one of these brandnames, TRESSON, had been exposed in printed form it was considered appropriate to present it in the same form when assessing the dependent variable. However, when doing so without precluding exposure, the exposure frequency manipulation would undoubtedly be disrupted. The measure taken was to print the names on a sheet of paper, fold and staple it and insert it - together with the other form referred to earlier - in an envelope not to be opened before being told to do so).
Please mention the number of the brand that you want to receive by mail'. (In front of the brandnames - 1. TRESSON and (printed below TRESSON), 2. VERGONS - a number (1/2) was indicated. To avoid the possibility that some Ss might choose a particular brand because of the ease of its pronunciation, Ss were requested to mention a number).
After this number was mentioned, the caller asked S whether s/he had any remarks. If the answer was negative, one more question was asked: whether anything did attract special attention. These last two questions obviously were meant to detect any suspicion on the part of the Ss. Finally, Ss were thanked for their participation and the call was terminated. Ss received their pen afterwards by mail and an explanantion why its brandname differed from the one asked for. Questions asked in the process but not referred to in the description of the procedure thus far pertain to the Ss' naiveté with regard to the contents of the critical paper at the start of the interview, their hesitation or refusal to make the choice and the desire to reverse the choice after having made one.

The following adaptations were introduced for the production of the other conditions:

- For the exposure-level = 7 exposures, Ss were requested to turn to the pages 2, 4, 12, 14 and 18 of the Stadsnieuws.

- In the limited attention conditions, Ss were asked to turn

(consecutively) to the concerning page(s) after having been instructed to 'count the number of ads on this/these page(s) as quickly as possible. When I say 'start' you immediately turn to the (next) page and start counting. As soon as you know the number of ads on the page, you mention this number. Then I will note this number and the time that you needed to determine it'. This instruction was preceeded by the information that the research was on the number of ads that people can see within a limited time-span.

- In the risk-Conditions, the Consumers' Guide purportedly reported:
  'There are no bad brands. So, a bad buy is impossible. Yet, it can do no harm to be careful when choosing such a pen because of the quality differences between the brands. By the way, they are all equally priced'.

Conditions 2 through 8, which are not described extensively here, may be formed by adapting Condition 1 with the concerning alternative factor-levels of which the operationalizations are indicated above.

Results and discussion

The manipulation checks showed that only few (2) subjects actually noted the relationship between the ads and the gift question[1]. 12 Persons hesitated before making a choice and 9 persons, in addition to these 12 persons, initially did not want to make a choice. Hesitation nor refusal was behavior characteristic of any condition in particular. Because of the small number of persons and as there are no direct theoretical reasons for doing so, no separate analyses were performed for these subjects nor were they excluded from the analyses.
It was checked whether Ss had looked through the critical

1 Which is different from the relationship between the ads and the name of one of the alternatives in the gift question. 55 Ss saw this latter relationship.

paper before the research took place. This check provided information that may prove important, especially in connection with the exposure manipulation: 63 of the 155 Ss had seen (some of ?) the contents of the paper (about 40%)[1]. Since this may have disturbed the exposure frequency manipulation, it will be checked whether this was indeed the case.
With analyses of variance the main- and interaction-effects of the three experimental factors, and the one not-manipulated factor: previous exposure to Stadsnieuws, will be assessed. Where appropriate, the preference for the advertised brand(name) will be compared with the same preference in the control condition(s). In the latter conditions, Ss had not been exposed to the Stadsnieuws paper at all. In the no-risk control condition, 9 out of 15 preferred TRESSON over VERGONS. In the risk control condition, 8 out of 13 Ss showed a preference in the same direction. It seems justified to assume no difference between the two conditions and take the preference for TRESSON over VERGONS to occur in 61% [(60% + 61.5%)/2] of the cases under conditions of no exposure prior to assessment of preference. In both control conditions, which will be treated now as one single condition, brandnames were presented in the same standard order as in the experimental conditions. It may be noted that the slight preference for TRESSON may be due to this order, which effect might have been eliminated by counterbalancing. The practical disadvantages of this latter possibility were judged to outweigh its advantage.
In the analyses, preference will be taken as a dummy variable, with '1' indicating a preference for TRESSON and '0' indicating a preference for VERGONS.
The means of the conditions and of the factor-levels are presented in Table 37.

Table 37, p. 206, about here

[1] There is no evidence whether this experiment itself had any effect upon the previous exposure to the Stadsnieuws paper.

Mere inspection of the means indicates that the two major hypotheses will not be confirmed, with the difference between the means in a direction contrary to the direction expected: The preference for the advertised (exposed) brand is stronger when Ss are exposed to the brand once (.85) than when they are exposed to it 7 times (.78) (it is assumed that, during the telephone call, the Ss were effectively exposed to the intended number of exposures). In addition, when the choice is described as moderately risky, the preference for the more frequently exposed brand is less strong (.78) than when the choice is between equally excellent alternatives (.85). An analysis of variance indicates no significant main- and interaction effects (see Table 38), thus not confirming hypotheses.

Table 38, p. 207, about here

In Table 39 all factor-levels are compared with the control condition. The levels limited attention, no risk and 1 exposure differ significantly from the control condition, while the differences between the respective opposite levels and the control condition fail to reach the 5%-level[1].

Table 39, p. 207, about here

Even though it was assumed that during the telephone call the Ss were effectively exposed to the intended number of exposures there is no guarantee that the two levels of experimental exposure frequency were the actual exposure frequency levels, with the relatively large number of Ss having gone through the critical newspaper before the call. For this reason, in the analysis of variance the factor previous exposure to Stadsnieuws was included. The pattern of means that

[1] Since these various tests are not independent, for correct interpretation of the $\bar{z}$-values a comparison is made with the distribution of the t-statistic in comparing treatment-means with a control. With an increasing number of means, a higher t/$\bar{z}$-value is required to reach significance.

emerges in each of the two levels of this factor (previous exposure versus no previous exposure) does not seem to deviate significantly from the initial pattern, an observation that is confirmed by a 4-way analysis of variance (see Tables 40 and 41).

Tables 40 and 41, pp. 208, about here

This analysis indicates no significant main- or interaction effects for previous exposure to Stadsnieuws. Therefore, for the remaining analyses we return to the original 2^3 design.
One possible explanation for a reversal of the expected effect is related to the fact that this is the first experiment in which the exposed stimuli are deliberately designated as being advertisements. Advertisements are, by their very nature, meant to persuade.
Their effectiveness is dependent, among other things, upon the susceptibility or resistance to persuasion of the potential persuadee. In its turn, susceptibility or resistance to persuasion is dependent upon the persuadee's awareness of an attempt to influence him, with a negative relationship between awareness and susceptibility (e.g. Walster and Festinger, 1962; Kerrick and McMillan, 1961; Brehm, 1966 - 'reactance').
It does not seem unlikely that the subjects in the present experiment were aware of a persuasive attempt and did re-act to or resist it: stimuli were all equal; the frequency of exposure was relatively high given the time period within which exposures took place and relative to other advertisments/persuasive attempts; and additional exposures did not contain additional information about the product so that these exposures could be attributed to persuasive/commmercial intentions of the advertiser rather than to, for example, the manufacturer's intent to inform consumers.
If this interpretation is valid, the preference for the exposed stimulus should be lower in the experimental conditions in which we may expect subjects to be aware of a persuasive attempt: in the elaborate attention, 7 exposures con-

ditions: Conditions 3 and 4 - as compared to the remaining Conditions 1 and 2 and 5 through 8. The proportion of Ss choosing 'TRESSON' in Conditions 3 and 4 was .70; the proportion of Ss choosing the same brand in the other conditions (excluding the control condition) was .85. This difference is significant at the 5%-level ($\bar{z} = 1.87$, $p < .05$), and the proportion of Conditions 3 and 4 does not deviate significantly from that of the control condition ($\bar{z} = 0.64$, n.s.)[1]. Actually, one-sided tests do not apply here as the initial theoretical argument indicated a difference in the other direction. As could be expected on the basis of results reported earlier, the differences between the proportion in Conditions 1, 2, and 5 through 8 combined is significantly different from the control-proportion ($\bar{z} = 2.28$, $p < .02$). This result suggests that a reactance interpretation, reduced susceptibility to persuasion by (increased) awareness of a persuasive attempt, may indeed be valid here. In the absence of evidence that is related more directly to this issue, no definite conclusions can be drawn.

Remains to be explained why 1 single exposure was powerful enough to produce a significant difference in the choice. This finding deviates considerably from the results obtained in the laboratory, in which exposure-level 1 often produced affect-ratings or preference-scores not or only slightly different from the ones obtained at exposure-level zero.
The two most apparent differences between an exposure at frequency 1 in the laboratory and such an exposure in the last field experiment are 1. that in the former case, the stimulus is presented on slides with an experimenter controlling this stimulus, while in the latter case, the stimulus- being a newspaper advertisement - is seemingly beyond the experimenter's control; 2. that in the laboratory, exposure level 1

[1] This difference also precludes the possibility that the absence of a main effect for frequency is due to a ceiling effect with the maximum proportion reached by exposure frequency 1, thus leaving 'no room' for an additional effect for exposure frequency 7.

is one out of a number of exposure levels (in a within-Ss design) while in the reported field experiment (with a between-Ss design) this is not so.
It is not clear whether these differences are important for an explanation of the effect obtained with the single exposure. With regard to the first difference, no straightforward interpretation seems available, other than that the unobtrusiveness of the exposure manipulation in the field may have made this manipulation more powerful.
With regard to the second difference, a more basic question arises: could it be that the relative number of exposures is more critical than the absolute exposure frequency ? If so, one might change the slope of the frequency-affect relationship at a certain frequency-range by simply adding or eliminating frequency-levels to/from the extremes of the exposure-frequency dimension. In the light of results of experiments reported in the literature, in which also between-Ss designs were employed, the answer is probably negative, although the question may be valid under certain circumstances. This is not the place to pursue this matter more elaborately, however.

In conclusion, the hypotheses of the present experiment were not confirmed. The preference for the exposed stimulus was stronger than for the same nonexposed stimulus but this effect was not mediated by exposure frequency, assumed perceived risk and level of attention, nor by their possible combinations. A factor that, on the basis of post-hoc reasoning and interpretation of the data, seems capable of possibly having co-determined the obtained findings is awareness of a persuasive attempt.
A next experiment should be aimed at clarifying the effect of the way in which a subject perceives the exposure manipulation, that is, the nature of the stimulus in combination with the number of exposures. The awareness of a persuasive attempt may then be manipulated by describing the stimulus as either a brandname or an advertisement and/or by having subjects attribute the number of exposures to a persuader's intentions or to chance.

SUMMARY AND GENERAL DISCUSSION

In the course of a research project extending over a series of experiments, a researcher is not unlikely to be confronted with an approach-avoidance conflict centering around the point of conclusion. The approach component of the conflict pulls him toward publication, the avoidance component requires him to first answer the most burning remaining questions. Together, they keep him from publication. Miller (1944) indicated that the tendency to approach is stronger at a distance to the goal and that near the goal the tendency to avoid is greater. The result is a self-maintaining conflict keeping a person at a point where the approach component equals the avoidance component.
However, a researcher may be an exception to this 'rule'. He knows, in advance, that by the very additional research that provides an answer to the most burning remaining questions, new burning questions may be generated, which may bring him to publish anyway in spite of such remaining questions. He may then solve the conflict by concluding his research report with the statement that future research is needed.

Looking back at the experiments that have been reported in this dissertation, the most general conclusion is that the results of the laboratory experiment can generally be interpreted in favor of the functional exposure hypotheses, that a number of burning questions regarding the subsequent field experiments are as yet unanswered and that, therefore, future research is needed.

In this discussion an attempt is made to critically evaluate the series of experiments and their underlying theorizing and thereby provide the main conclusions, problems and questions that may help guide this future research. First, an attempt will be made to briefly summarize the theoretical and empirical aspects of this dissertation. For a more detailed description the reader is referred to the previous text.

It is the goal of this dissertation to come to a better understanding of the relationship between exposure frequency and affect in the area of consumer behavior.
The available evidence in the social psychological literature is not capable of indicating what the role is of exposure frequency and how important or unimportant it is as a possible determinant of consumer affect. In the first place, because the social psychological literature on exposure-affect relationships is characterized by a lack of consensus as to how positive relationships develop; in the second place, because the social psychological experiments have not been geared, theoretically nor operationally, to the issue of consumer behavior.
With most of the evidence being available in the social psychological literature it was decided to start with a reassessment of that literature in attempting to gain a better understanding of the crucial factors. This resulted in the formulation of a functional exposure hypothesis which maintains that positive frequency-affect relationships will be obtained if and to the extent that the higher exposure frequencies are somehow functional for the individual for the maintaince or achievement of the desired relationship with the environment, functionality being associated with positive affect. The previous hypotheses on the mediators of frequency-affect relationships are taken as each considering a specific source of the functionality of higher exposure frequencies. Thereby, predictions made by the functional exposure hypothesis may very well be similar to those of previously proposed hypotheses. However, the functional exposure hypothesis attempts to converge these previous, often partly overlapping hypotheses into one general interpretation and to more parsimoniously predict under which conditions positive and nonpositive frequency-affect relationships will develop. To put it differently, the 'whole' hypothesis intends to be more than the sum of its 'part'-hypotheses.

Even though consumer frequency-affect relationships are and were the issue under consideration, the reassessment of the social psychological literature and the formulation of an alternative hypothesis based upon this literature called for an initial empirical approach through social psychological experiments. In the first three of these, being laboratory experiments, evidence was obtained suggesting that, indeed, the functionality of higher exposure frequencies could very well be the critical mediator in frequency-affect relationships. If we may generalize from these first three experiments, this, in its turn, suggests that in experimental research on the previous hypotheses functionality of the higher exposure frequencies was implicitly manipulated, simultaneously with the manipulation of the specific mediating factors inherent to these various explanations.

Based upon a post-hoc interpretation of the nature of experimental situations, uncertainty was proposed as a central concept. It was hypothesized and confirmed that the most positive frequency-affect relationships would be observed under conditions of a moderate certainty of a positive outcome and the least positive or nonpositive relationships under conditions of certainty of the absence or presence of a positive outcome.

For the subsequent more consumer behavior oriented laboratory experiments, the concept of uncertainty was translated into the analogous concept of perceived risk. In parallel with the predictions made in connection with the various levels of (un)certainty, it was hypothesized that the most positive frequency-affect relationships would be observed under conditions of moderate perceived risk (with risk relating to the probability of achieving a positive outcome) and that under conditions of either very high or very low perceived risk the frequency-affect relationships would be less positive or nonpositive. After having had to solve some operational problems regarding the manipulation of perceived risk, the hypotheses were confirmed. In the 'consumer behavior' laboratory experiments two dependent variables were employed, each dealing with

the frequency-affect relationship: a score reflecting the slope of the linear trend of the frequency-affect relationship and the frequency of the chosen brand (stimulus) when the experimental instructions requested to select one of the alternatives (each associated with one of the various exposure frequency levels).
In Experiment 7, it was checked whether the position in time of the exposure manipulation relative to the perceived risk manipulation would have an effect upon the type of frequency-affect relationship. For the dependent variable linear trend, the results in the risk-manipulation-after conditions showed a pattern comparable to those obtained in the risk-manipulation-before conditions. The frequency of the chosen brand was unaffected, however, when the exposure manipulation preceeded the risk manipulation. Possible reasons for this latter finding were discussed.

The findings of the social psychological and more consumer behavior-oriented laboratory experiments combined were interpreted as being supportive of a functional exposure interpretation. The latter type of experiments had provided clues as to how positive and nonpositive frequency-affect relationships might be generated outside of the laboratory. An initial field experiment with a simple design (factor exposure(-frequency): exposure versus nonexposure; factor perceived risk: medium versus low risk) and unobtrusiveness of manipulations did not produce significant results, although the difference between the proportions concerning the preference for the exposed/nonexposed brand tended in the hypothesized direction. A second field experiment was set up to control for or determine the role of possibly mediating factors that might have affected the results of the first field experiment. Again, the exposure manipulation was unobtrusive (through newspaper advertisements) in the sense that subjects did not perceive a relationship between the exposure and the dependent variable as the researcher's subject of interest. The hypotheses, comparable to those proposed in relation to the laboratory ex-

periments on the mediating effects of perceived risk, were not confirmed by the results, even though a stronger preference was observed for the exposed relative to the nonexposed brand(name), the preference for the most frequently exposed brand was not stronger and, rather, somewhat weaker than for the brand exposed only once. In addition, there was no mediating effect of perceived risk. Possible reasons were discussed. Elsewhere in this discussion we will consider one of these reasons more extensively.

After this brief summary of the preceeding text, we will discuss the major unanswered questions and issues that have been proven or suggested to be critical for the understanding of frequency-affect relationships. Subsequently, we will reflect upon the potential function of the functional exposure hypothesis for the prediction of the effect of exposure frequency upon 'real life' consumer affect. Considering the outcomes of the two field experiments it would be premature to speculate here about specific or interaction effects.
The discussion of the central issues will be divided in 4 parts. The first part deals with the independent variable frequency of exposure. The second concerns the dependent variable affect. Part 3 will be discussing the mediating variables and, in part 4, an attempt will be made to integrate reflections of the first three parts into some general observations on frequency-affect phenomena.

1. Exposure frequency

In the reported experiments, the maximum level of exposure frequency employed was 15, assuming that in the field experiments this number of exposures was not higher. We should note that with other frequency-levels, the obtained results might have been different. On the other hand, this would not be necessarily so. In the discussion of the last field experiment the following question was asked: could it be that the

relative number of exposures is more critical than the absolute exposure frequency ? This question calls for a systematic comparison between results obtained in within-Ss designs and those obtained in between-Ss designs. In essence, this would amount to the question whether functionality of the higher exposure frequency of some stimulus is co-determined by the occurrence of stimuli exposed at other frequencies, or that the relationship between exposure frequency and degree of functionality (for a given person in a given situation) is fixed, that is, independent of co-occurring exposure frequencies.

Another question regarding the exposure-level is whether frequency and thereby repetition and interruption are critical for the development of positive exposure-affect relationships. According to the functional exposure hypothesis this is not necessarily so: one exposure may also be functional. If the hypothesis does not depart from a fundamental theoretical difference between, on the one hand, the distinction between zero exposures and 1 exposure and, on the other hand, between, for example 3 exposures and 4 exposures, the functional exposure hypothesis may also apply to exposure duration. This would imply that repetition and interruption are not critical aspects of the exposure-variable. At a more operational level, it obviously would not necessarily imply that the duration of exposure should be equal to the sum of the exposure-periods in the case of an interrupted sequence of exposures for obtaining the same effect on affect.

In this dissertation, the term exposure frequency was employed without making reference to the level of familiarity. Several possible levels of familiarity may be distinguished: preconscious perceptual familiarity, cognitive familiarity that a person is unaware of unless asked to remember and 'labeled' familiarity - a person spontaneously noting some stimulus to be familiar to him. And possibly, there may be other or additional levels. The issue, however, is whether, and if so how, the level of familiarity does influence the exposure-

affect relationship. Hitherto, this issue was not a central one, the focus being on the role of functionality of higher exposure frequencies, but it will be, in part 4, in the confrontation between the mere exposure - and the functional exposure hypothesis. The level of familiarity may also be important in relation to some of the possible mediating variables such as attribution-/reactance-effects (see later, part 3).

2. Affect

We already noted the theoretical and empirical differences between the two dependent affect-variables that were employed. In a number of cases, somewhat 'better' results were obtained with the variable frequency of the chosen brand. One other difference between the two variables that possibly could be responsible for this effect and that has not yet been noted is that the question relating to the frequency of the chosen brand is stated in the positive sense: 'which of the brands do you prefer ?' rather than: 'which of the brands do you prefer least ?' or, a little awkward: 'Indicate a brand that you do not want'. There is no evidence indicating that this type of formulation did or did not systematically affect the outcomes, but this formulation may possible have generated (implicit ?) response tendencies on the part of the subject: more of this (exposure frequency), then also more of that (preference). Finally, we must note that the time-interval between the exposure manipulation and the assessment of the (frequency of the) chosen brand was in all cases somewhat larger than the one between the exposure manipulation and the assessment of the affect-scores per frequency-level. The size of the time-interval was suggested by Stang (1974) as one of the factors related to the occurrence of positive frequency-affect relationships. To the extent that the time-intervals associated with the two dependent variables were (psychologically) significantly different, the difference between them may possibly be not more than a time-interval difference.

3. Mediating variables

Because of its central role in this dissertation, the mediating variable functionality of higher exposure frequencies has received ample attention.
Even though the functional exposure hypothesis was supported in a number of experiments, there is a weak link: in the reported research, the degree of functionality is always an implied factor. Conditions were designed by which the degree of functionality could be manipulated, however indirectly. Assumptions regarding the effectiveness of these conditions in affecting functionality seem justified but remained unverified. Should the functional exposure hypothesis be developed further, verification of these assumptions will be desirable, although the operationalization of the manipulation checks may be a burdensome venture.

With regard to the manipulations intending to differentiate degrees of functionality one may note that in the laboratory experiments with their obtrusive uncertainty- and risk-manipulations hypotheses received more support than those in the field experiments with their unobtrusive manipulations. Could it be that in the laboratory, persons, when playing their role as an experimental subject, conform to the norm (implicitly) presented to them by the experimenter's instructions ? The researcher is tempted to presume that actual (psychological) uncertainty- and perceived risk-differences are brought about by his manipulations and may feel supported by the results on the manipulation checks. However, one might object to this that manipulation checks themselves are subject to compliance-effects - that subjects' conformation to the experimenter's norm is also reflected in these checks. This interpretation, if valid, would necessitate a rather dramatic reinterpretation of the laboratory results. In the research reported here, the possibility of mere social compliance to the experimenter's

norms was not systematically investigated. However, when subjects were debriefed after their participation, the reactions of surprise and wonder could hardly be taken themselves as those of role-players. And yet, even if the social compliance interpretation were correct, it would not explain how and why 'uncertainty' and 'perceived risk' differences are related to frequency-affect relationships.
Another related point may be raised here. A basic assumption underlying the various experiments is that subjects aspire positive task outcomes and attractive consumer choice-alternatives. However, it is theoretically possible that subjects' participation and performance were motivated also or even primarily by reasons of a quite different nature, such as, for example, to escape from the daily routine. In reaction to this point, a comment may be made that is comparable to the one presented in relation to the previous point: While in their role as subjects, the participants' behavior appeared to be motivated toward positive outcomes. Additionally, results would probably have appeared quite differently if subjects approached the experiment in a different way than presumed.

The initial affective (non)neutrality of the stimulus has been shown in previous research to be an important mediating variable. The results of the last field experiment, Experiment 9, seem to point at the possibility that stimulus neutrality should also be interpreted in a different sense. It was suggested that the fact that the stimulus was described to subjects as an advertisement may be (in part?) responsible for the nondevelopment of a positive frequency-affect relationship in that experiment. An advertisement, as opposed to a brandname, is likely to be perceived as a persuasive attempt by the subject. If so, it is not unlikely that the density of such attempts within a short period generates affect contrary to the one advocated by the advertisement. Note that in half of the conditions of Experiment 9, the ad was exposed 7 times within a period of less than 2 minutes. Such a 'bombardment' of a commercial source's attempts to 'force a brandname in'

may very well lead to resistance or reactance on the part of the receivers. (Awareness or conscious recognition as possible concomitants of stimulus familiarity, referred to in part 1., may mediate the mediating effect of reactance. For example, preconscious recognition of stimuli may be assumed not to produce cognitive activity requiring reactance effects). In other words, stimulus neutrality may be of a bi- or possibly even multi-dimensional nature, something worth paying attention to when planning research on the effects of exposure frequency of 'neutral' stimuli.

4. General observations on frequency-affect phenomena

Let us start this section by performing, in thinking, a little experiment.

Subjects: 3 carpenters with equal experience and physical strength, to be divided evenly over the conditions (n per cell = 1).

Stimuli: 2 similar hammers, both brand new but one of them exposed to the Ss prior to the experiment.

Material: Cotton, oakwood and stainless steel, 1 cubic foot each; 1 2-inch nail.

Design & procedure: The single factor: task-difficulty has three levels: very easy, ordinary and impossible. In the Condition Very Easy, S is requested to drive the nail into the cotton as fast as possible with one of the hammers. Conditions Ordinary (oakwood) and Impossible (stainless steel) are equal except for the material into which the nail has to be driven. The dependent variable is exposure frequency of the hammer selected by S to carry out his task with.

Hypothesis: In Conditions Very Easy and Impossible, Ss will show no preference for either hammer. S in Condi-

tion 2, Ordinary, will prefer the previously exposed hammer.

Results: Ss' reactions in the respective conditions are:
Condition Very Easy: 'I don't care which hammer';
Condition Ordinary: 'Given me the one I've seen. Why not?'
Condition Impossible: 'Are you kidding?'.
With the very clear between-cell differences and the absence of any within cell variation, analyses seem superfluous. The hypothesis is confirmed.

Discussion: Basically, this may be what the functional exposure hypothesis amounts to. It does not seem to do much more than predict that persons tend to rely more upon familiar instruments than upon unfamiliar instruments in cases where these instruments really matter. What it does more is that it extends itself to instruments of a more psychological nature, in relation to which one would be more reluctant to give this common-sense-like interpretation. The functional exposure hypothesis suggests that, metaphorically speaking, higher exposure frequencies may serve as an instrument of which the potential contribution depends upon the very combination of situational, personal and object-characteristics as it relates to the generation or existence of uncertainty/ perceived risk. Then, the critical question is whether the functionality of higher exposure frequencies is a necessary or sufficient condition for positive frequency-affect relationships to occur. The research reported in this dissertation shows that non-positive frequency-affect relationships may be obtained by strongly reducing or eliminating the (presumed) functionality of higher exposure frequencies, an outcome not deemed possible by the classic mere exposure hypothesis. This suggests that functionality may indeed be the necessary condition for positive frequency-affect relationships to occur. However, in the confrontation with the mere exposure hypothesis, one important issue remains to be dealt with. This issue, referred to earlier on page 36, concerns Moreland and Zajonc's (1977) and Wilson's (1979) finding that no higher order cognitive

activities are necessary for frequency effects on affect. This finding would seriously question the functional exposure hypothesis to the extent that this hypothesis presumes higher order cognitive activities for the assessment of functionality. However, evidence was found in the literature that both frequency- and functionality-assessment may be automatic processes, which led us to conclude that the findings of the three authors were not necessarily in conflict with the functional exposure hypothesis. At this point, we are capable of referring to some more recent, albeit unpublished evidence obtained by Mandler and Shebo (1982). These authors ran a total of 19 different experimental conditions comparable to those reported by Kunst-Wilson and Zajonc (1980) and repeatedly failed to replicate the latter authors' findings.
At the same time, we should note that in the research reported in this dissertation, level of processing probably varied as a function of the explicit or implicit experimental requirements to pay attention to the exposed stimuli: In the laboratory, experimental subjects were explicitly required to watch the stimuli; half of the subjects in one field experiment (Experiment 9) had to divide their attention between the critical stimulus and noncritical stimuli of a comparable nature (advertisements), while the other half hardly paid any attention to the critical stimuli; and in another field experiment (Experiment 8) subjects' attention probably declined considerably with increasing exposure, if attention was being paid at all. Thus, we may assume that in the various experimental settings the level of processing was differentially affected. We should note also, post hoc, that in the experiments reported here, hypotheses were confirmed only if subjects' attention to the experimental stimuli was required. At this point, in the absence of additional evidence, conclusions regarding the relative influence of level of processing would be premature, however, and so would a definite conclusion on the relative status of the two opponent hypotheses. Yet, in the presence of the available evidence it seems justified to continue validation research on the functional exposure hypothesis.

For the final point of discussion, we should turn to the question of the significance of exposure frequency relative to that of other determinants of consumer affect. Considering the number of conditions that have to be met for higher exposure frequencies to be functional, as they have been suggested by the functional exposure hypothesis, the relative significance of the factor exposure frequency may be quite limited: only when a moderate level of risk is perceived and a consequential choice has to be made and the stimulus is initially affectively neutral and the exposure level is neither too high nor too low, a positive frequency-affect relationship may develop. To these conditions we should probably add some other ones such as, for example, the one suggested in the discussion of the latest field experiment - no reactance effects. All these conditions taken together, and possible other determinants of consumer affect with which exposure frequency would have to 'compete', suggest that exposure frequency is likely to have only a marginal effect on real life consumer affect.

However, some recent evidence in the literature may allow us to speculate in a different direction. For this, we will refer to the concept of involvement, for which the attention in the consumer behavior literature has been increasing rapidly in the past few years. A leading textbook on consumer behavior[1] even uses this concept for the most basic distinction between types of consumer decision processes.

The first literature on involvement was presented by Hovland, Janis and Kelley in 1953 and their research provided the basis for the social judgment theory (Sherif, Sherif and Nebergall, 1965) according to which the degree of issue-involvement is positively related to the latitude of rejection of a persuasive message on this issue. Krugman (1965) was the first to introduce the concept of involvement in the consumer behavior literature. However, in spite of the increasing interest in involvement, there is no general agreement as to the nature of involvement (Hansen, 1981). Leavitt et al. (1980)

1 Engel, J.F. and Blackwell, R.D. Consumer Behavior. Fourth Edition. Chicago, The Dryden Press, 1982.

state that: 'although there has been consensus that high involvement means personal importance, consumer behavior theorists have shown little agreement regarding the psychological analysis of importance - alternatively interpreting it in terms of personal connections, sequence of information processing, complexity of processing, and degree of arousal. This uncertainty about high involvement necessarily leaves the theoretical analysis of low involvement unsettled' (p. 16). In spite of the conceptualization problems, involvement may be related to certain factors and effects that were found or suggested to be of significance for the development of positive frequency-affect relationships: the initial affective neutrality of the stimulus, the frequency-level, and reactance effects. In the case of low involvement consumer behavior, information is stored with little awareness (Engel and Blackwell, 1982), which may reduce 1) the emphasis on, and thereby the effect of initial affective non-neutrality, 2) the possibility that reversal effects at very high frequencies occur (as there is little perceptual and cognitive emphasis on additional exposures), and 3) the possibility of reactance effects - under conditions of low involvement, counterargumentation is reported to be unlikely (e.g. Petty & Cacioppo, 1980)[1].

Of course, these relationships between degree of involvement and the various mediating, and thus possibly limiting factors have not or only partially been substantiated and should be considered speculative at this point. However, if evidence would be found for their existence, the potential significance of exposure frequency as a determinant of consumer affect could be substantial, noting that a considerable number of authors (Engel and Blackwell, 1982; Hansen, 1981; Olshavsky and Granbois, 1979, and others) have indicated that many consumer decisions are characterized by low involvement.

[1] We should distinguish between low involvement during exposure and low involvement at the moment of choice.

Here, we have added one more major question to the ones that already remained unanswered. It would not be justified to speculate even further beyond the boundaries as they have been provided by the experimental data. Instead, we conclude by stating again that additional research is needed, now that some critical answers seem to come within reach, answers not only relevant for theorists but probably also for those practically involved with consumer behavior.

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NEDERLANDSE SAMENVATTING

NAAR EEN FUNCTIONELE INTERPRETATIE VAN DE RELATIE TUSSEN FREQUENTIE EN AFFECT; EEN CONSUMENTENPSYCHOLOGISCH ONDERZOEK

In 1968 is door Zajonc de "mere exposure"-hypothese gepresenteerd: het louter herhaald blootgesteld worden aan een stimulus leidt tot een meer positieve evaluatie van die stimulus.

Deze hypothese zou van grote betekenis kunnen zijn voor het inzicht in de ontwikkeling van de attitudes van consumenten, aangezien hun omgeving in belangrijke mate door herhaling wordt gekarakteriseerd. Consumenten worden zeer dikwijls geconfronteerd met marketingstimuli die hen reeds bekend zijn.

Deze dissertatie gaat daarom in op de validiteit van de "mere exposure"-hypothese en op verklaring(en) die aan relaties tussen (exposure) frequentie en affect ten grondslag zouden kunnen liggen. In Hoofdstuk 1 wordt aan beide onderwerpen aandacht besteed.

Uit de literatuur blijkt dat naast positieve ook niet-positieve en negatieve, zowel lineaire als niet-lineaire, frequentie-affectrelaties voorkomen. Ter verklaring van met name positieve frequentie-affectrelaties worden in de sociaalpsychologische literatuur een aantal hypotheses gepresenteerd. Hoewel resultaten van laboratoriumexperimenten de meeste van deze deels elkaar overlappende hypotheses in meer of mindere mate bevestigen, is geen ervan in staat een eenduidige en algemene verklaring te bieden voor het optreden en niet-optreden van deze relaties.

Daarom is getracht een hypothese te genereren die wèl een algemene verklaring van frequentie-affect relaties kan verschaffen. Hiertoe is in Hoofdstuk 2 de psychologische betekenis van de experimentele situatie in het conventionele frequentie-affectexperiment nader geanalyseerd. Dit resulteerde in de formulering van de "functional exposure"-hypothese. Deze hypothese gaat ervan

uit dat positieve frequentie-affectrelaties alleen zullen worden geobserveerd wanneer hogere exposure-frequenties psychologische functionaliteit inhouden: indien ze leiden tot de reductie of het vermijden van psychologische onzekerheid. Meer in het algemeen: hogere exposure-frequenties zijn functioneel wanneer ze leiden tot het verkrijgen/handhaven van een geprefereerde psychologische "state" of het vermijden/reduceren van een niet-geprefereerde "state". De "functional exposure"-hypothese onderscheidt zich van eerdere hypotheses door de nadruk die ze legt op de rol van de functionaliteit van hogere exposurefrequenties en op de psychologische betekenis van de situatie, d. i. de interaktie van persoons-, situatie- en stimulusvariabelen. De eerder gepresenteerde hypotheses richten zich meer exclusief op de effecten van één of twee van deze categorieën variabelen.

In Hoofdstuk 3 volgt de bespreking van enkele laboratorium-experimenten. In deze experimenten wordt getracht de houdbaarheid van de functional exposure hypothese vast te stellen. Omdat de eerder gepresenteerde frequentie-affect hypotheses afkomstig zijn uit de sociaalpsychologische literatuur zijn deze eerste experimenten sociaalpsychologisch van aard. Nadat duidelijkheid is verkregen over de mediërende rol van functionaliteit van hogere exposure-frequenties, richt het onderzoek zich meer op het consumentengedrag.

De centrale gedachte achter de experimenten die besproken worden in Hoofdstuk 3, is dat hogere exposure-frequenties niet functioneel zijn wanneer, in een taaksituatie, het individu 1) zeker is van het niet kunnen verkrijgen van een positief resultaat of 2) zeker is van het zullen verkrijgen van een positief resultaat. Daarentegen kunnen hogere exposure-frequenties tussen deze beide extremen wel functioneel zijn: namelijk wanneer het individu enigszins onzeker is ten aanzien van het verkrijgen van een positief resultaat. De frequentie-affectrelatie wordt meer positief naarmate de functionaliteit van de hogere aanbiedingsfrequentie(s) toeneemt. Op basis van een combinatie van theorieën van Atkinson (1964) en Vroom (1964) worden de hogere exposurefrequen-

ties het meest functioneel verondersteld als de kans op een positief resultaat ligt tussen 50 en 100%, met 67% als theoretisch maximum.

De resultaten van de drie experimenten bevestigen over het algemeen de "functional exposure"-hypothese.
Positievere frequentie-affect relaties werden geobserveerd:

- naarmate de experimentele situatie meer het karakter had van een taaksituatie (In een niet-taaksituatie is het verkrijgen van een positief resultaat überhaupt niet aan de orde);
- wanneer, in een taaksituatie, het subject meer vertrouwen heeft in het eigen vermogen een positief resultaat te verkrijgen;
- wanneer, in een taaksituatie, het individu het verkrijgen van een positief resultaat betrekkelijk waarschijnlijk acht (in vergelijking met een situatie waarin hij dit onwaarschijnlijk acht);
- wanneer er een afname is van onzekerheid, zoals gemeten met veranderingen in de huidweerstand geassocieerd met de hogere exposure-frequenties.

Het onzekerheidsbegrip uit de sociaalpsychologische literatuur vertoont sterke overeenkomst met het concept gepercipieerd risico uit de consumentengedragsliteratuur. Beide bezitten twee componenten: enerzijds (on)voorspelbaarheid, anderzijds bezorgdheid over de consequenties daarvan. De van de algemene "functional exposure"-hypothese afgeleide, meer specifieke, hypotheses laten zich dan ook gemakkelijk vertalen in termen van gepercipieerd risico: in geval van een zeer laag en een zeer hoog gepercipieerd risico zullen (kunnen) hogere exposurefrequenties niet functioneel zijn. Onder deze omstandigheden zullen geen positieve frequentie-affectrelaties worden geobserveerd. Positieve frequentie-affectrelaties zijn het meest waarschijnlijk bij een als middelmatig (hoog noch laag) gepercipieerd risico en bij een als betrekkelijk laag gepercipieerd risico.
In Hoofdstuk 4 wordt een en ander theoretisch behandeld en worden experimenten besproken waarmee gepoogd wordt het belang vast te

stellen van de variabele gepercipieerd risico voor frequentie-affectrelaties. In deze experimenten worden beoordelings- en keuzesituaties van consumenten gesimuleerd*.

De resultaten van de experimenten laten zien dat frequentie-affectrelaties minder positief (of niet-positief) zijn in geval van laag èn hoog risico dan in geval van middelmatig risico. Deze uitkomsten zijn in overeenstemming met de verwachtingen gebaseerd op de "functional exposure"-hypothese.

In de laboratoriumexperimenten waarin het consumentengedrag wordt gesimuleerd, wordt telkens de persoonlijkheidsvariabele ambiguïteitstolerantie gemeten. De algemene bevinding met deze variabele is dat personen die relatief meer ambiquiteits-intolerant zijn de vaker getoonde stimuli positiever waarderen dan de meer ambiguïteits-tolerante personen. Ook dit resultaat is in overeenkomst met de "functional exposure"-hypothese.

Na deze laatste experimenten zijn twee veldexperimenten uitgevoerd. In het eerste veldexperiment werd een zwakke, niet-significante tendens in de gehypothetiseerde richting geobserveerd: personen in de conditie met middelmatig risiko kiezen iets vaker het product met de vaker getoonde merknaam dan personen in de conditie met laag risico. In een tweede veldexperiment werd nogmaals getracht de "functional exposure"- hypothese onder reële omstandigheden te toetsen. De frequentie-manipulatie vond plaats door middel van advertenties. De resultaten bieden geen bevestiging voor de hypotheses. De bevindingen suggereren de mogelijkheid van een reactantie-effect, mede gelet op het (overredende) karakter van de stimulus: een advertentie. De beide veldexperi-

* In het algemeen omvat de procedure van de experimenten achtereenvolgens de volgende fasen: risico-manipulatie, "merknaam" exposure-manipulatie, affect-rating en keuze voor één der alternatieven. In de "consumentengedrags"-experimenten wordt naast de individuele frequentie-affect relatie een tweede afhankelijke variabele gemeten: de frequentie van het gekozen alternatief (proefpersonen werden verzocht om na de affect-ratings één van de merken te kiezen).

menten worden besproken in Hoofdstuk 5.

Na de weergave van de resultaten van elk experiment volgt een bespreking van die resultaten en van hun betekenis voor volgend onderzoek. Tot slot volgt in Hoofdstuk 6 een algemene discussie over de verkregen resultaten en over de vragen en problemen die verband houden met de 9 experimenten. Bij de speculatie omtrent het relatieve belang van exposurefrequentie naast andere mogelijke determinanten van consumentenaffect wordt verwezen naar consumentengedrag onder lage betrokkenheid (low involvement).

Table 1 Experiment 1

Mean affect-scores per frequency-level and condition

Σ_T= Sum of scores transformed by coefficients of othogonal polynomials (linear trend)

	Frequency-level							
Condition	0	1	3	6	10	15	Σ_T	n
1: very hard/easy	4.33	5.11	4.89	4.28	4.83	5.28	3.28	18
2: nonperformance	4.50	4.44	4.67	4.39	4.72	4.22	-0.83	18
3: no apprehension	4.89	4.83	5.61	4.67	5.72	5.17	3.12	18
4: performance	4.28	4.89	5.44	5.00	5.94	4.89	5.77	18
5: 'mere exposure'	4.06	4.61	4.94	5.28	6.17	5.78	13.62	18

See also Figures 1 and 2, p. 209.

Table 2.

Analysis of linear trend. Conditions 1-3, Experiment 1

Source of variation within subjects (linear)	SS	df	MS	F	p
Frequency	2.75	1	2.75	0.88	n.s.
Conditions x Frequency	2.64	2	1.32	0.42	n.s.
Freq. x Subj.w.groups	160.24	51	3.14		

Table 3.

Analysis of linear trend. Conditions 4-5, Experiment 1

Source of variation within subjects (linear)	SS	df	MS	F	p
Frequency	48.33	1	48.33	16.11	<.001
Conditions x Frequency	7.89	1	7.89	2.63	n.s.
Freq. x Subj.w.groups	102.02	34	3.00		

Table 4.

Analysis of linear trend. Condition-sets 1-3 and 4-5, Experiment 1 (Unweighted means analysis)

Source of variation within subjects (linear)	SS	df	MS	F	p
Frequency	41.46	1	41.46	13.37	<.001
Sets x Frequency	18.61	1	18.61	6.00	<.05
Freq. x Subj.w.groups	272.78	88	3.10		

Table 5.

Analysis of linear trend. Simple effects of exposure frequency, Conditions 1-5, Experiment 1

Condition	Source of variation (Within subjects, linear)	SS	df	MS	F	p
1	Frequency	2.76	1	2.76	0.77	n.s.
	within cell	60.97	17	3.59		
2	Frequency	0.13	1	0.13	0.07	n.s.
	within cell	30.14	17	1.77		
3	Frequency	2.49	1	2.49	0.61	n.s.
	within cell	69.14	17	4.07		
4	Frequency	8.58	1	8.58	2.58	n.s.
	within cell	56.65	17	3.33		
5	Frequency	47.64	1	47.64	17.84	<.001
	within cell	45.37	17	2.67		

Table 6 Experiment 2

Mean affect-scores per frequency-level and condition

Σ_T = Sum of scores transformed by coefficients of orthogonal polynomials (linear trend)

	Frequency-level							
Condition	0	1	3	6	10	15	Σ_T	n
Perf.-task	4.05	4.32	4.74	5.58	5.16	5.26	9.42	19
Nonperf.-task	5.64	6.26	6.00	6.27	5.61	4.72	-6.33	12

See also Figures 3 and 4, p. 210.

Table 7.

Analysis of linear trend Conditions 1-2, Experiment 2

Source of variation	SS	df	MS	F	p
within subjects (linear)					
Frequency	4.13	1	4.13	1.15	n.s.
Conditions x Frequency	18.53	1	18.53	5.15	<.05
Freq. x Subj.w.groups	90.11	25	3.60		

Table 8 Experiment 3

Mean affect-scores per frequency-level and condition

Σ_T = Sum of scores transformed by coefficients of othogonal polynomials (linear trend)

	Frequency-level							
Condition	0	1	3	6	9	12	Σ_T	n
1. P_{pos} = 25%	3.86	3.50	2.59	5.00	3.95	4.09	4.90	22
2. P_{pos} = 50%	3.54	3.33	2.58	4.54	4.75	4.46	10.79	24
3. P_{pos} = 75%	3.33	3.67	2.22	4.89	4.78	5.22	15.4	9
4. P_{pos} =100%	2.75	3.85	2.58	3.35	3.96	4.38	9.27	26
5. Control	4.30	4.50	3.40	4.50	4.40	3.80	-1.70	10

See also Figures 5 and 6, p. 211.

Table 9.

Summary of analysis of variance. Conditions 1-3, Confidence, Experiment 3 (unweighted means analysis)

Source of variation	SS	df	MS	F	p
P_{pos}	3.13	2	1.56	0.70	n.s.
Error	100.22	45	2.23		

Table 10.

Analysis of linear trend Conditions 1-3, Experiment 3

Source of variation within subjects (linear)	SS	df	MS	F	p
Frequency	69.99	1	69.99	31.25	.001
P_{pos} x Frequency	11.97	2	5.98	2.67	<.10
Freq. x Subj.w.groups	116.63	52	2.24		

Table 11.

Analysis of linear trend.

Experiment 3, Confidence (least squares analysis)

Source of variation within subjects (linear)	SS	df	MS	F	p
Frequency	72.92	1	72.92	33.30	<.001
Confidence x Frequency	19.19	1	19.19	8.76	<.01
Freq. x Subj.w.groups	100.62	46	2.19		

Table 13.

Mean values of the two dependent variables per condition of Experiment 4. Top values: mean individual trends; Bottom values: frequency of the chosen brand (transformed)

qu.variation / conse- info / quences	all good quality		varying quality	
	info	no info	info	no info
	①	②	③	④
personal use	11.08	12.17	4.92	7.08
	0.27	0.50	2.00	1.17
	⑤	⑥	⑦	⑧
no personal use	5.58	9.42	3.33	8.42
	1.55	1.00	1.83	0.40

Table 14 Experiment 4

Mean affect-scores per frequency-level and condition

Σ_T = Sum of scores transformed by coefficients of orthogonal polynomials (linear trend)

Condition	Frequency-level 0	1	3	6	9	12	Σ_T	n
1	3.42	4.08	4.92	4.17	4.83	5.33	11.08	12
2	3.52	4.11	4.25	4.25	5.31	5.23	12.17	12
3	3.25	4.58	3.92	3.58	4.25	4.50	4.92	12
4	3.00	3.75	3.83	4.67	4.17	4.00	7.08	12
5	3.17	3.58	4.42	3.92	4.50	3.83	5.58	12
6	3.17	3.50	4.58	4.75	4.08	4.67	9.42	12
7	3.67	4.00	4.67	4.67	4.42	4.08	3.33	12
8	3.42	3.92	3.75	4.50	4.67	4.50	8.42	12

See also Figures 7 and 8, pp. 212-213.

Table 15 Experiment 4

Mean affect-scores per factor-level.

Σ_T= Sum of scores transformed by coefficients of orthogonal polynomials (linear trend)

	Frequency-level						
Factor-level	0	1	3	6	9	12	Σ_T
Personal use	3.30	4.13	4.23	4.17	4.64	4.77	8.82
No personal use	3.35	3.75	4.36	4.46	4.42	4.27	6.69
Information	3.37	4.06	4.48	4.09	4.50	4.44	6.24
No information	3.27	3.82	4.10	4.54	4.56	4.60	9.28
Quality variation	3.32	3.82	4.54	4.27	4.68	4.77	9.57
No quality variation	3.33	4.06	4.04	4.36	4.38	4.27	5.95

See also Figure 9, p. 213.

Table 16.

Analysis of linear trend. Experiment 4

Source of variation within subjects (linear)	SS	df	MS	F	p
Frequency (F)	82.37	1	82.37	25.42	<.001
Personal use (A) x F	1.55	1	1.55		
Qual.variation (B) x F	4.51	1	4.51	1.39	n.s.
Information (C) x F	3.17	1	3.17		
ABF	1.37	1	1.37		
ACF	0.79	1	0.79		
BCF	0.12	1	0.12		
ABCF	0.00	1	0.00		
Freq. x Subj.w.groups	285.14	88	3.24		

Table 17.

Summary of analysis of variance. Frequency of chosen brand
Experiment 4 (unweighted means analysis)

Source of variation	SS	df	MS	F	p
Personal use (A)	0.23	1	0.23		
Qual.variation (B)	1.49	1	1.49		
Information (C)	2.40	1	2.40		
AB	2.63	1	2.63	1.08	n.s.
AC	0.69	1	0.69		
BC	1.60	1	1.60		
ABC	0.00	1	0.00		
Within cell	203.91	84	2.43		

Table 18.

Mean individual trends and mean frequencies of the chosen brand
for groups scoring relatively high/low
on CHANCE SAT and EXP INFO, Experiment 4

		Trends	Freq.chosen
CHANCE SAT	relatively large chance	9.50	1.32
	relatively small chance	4.10	0.73
EXP INFO	relatively good info	10.16	1.37
	relatively bad info	5.36	0.85

Table 19.

Analysis of linear trend. Experiment 4 (least squares analysis)

Source of variation within subjects (linear)	SS	df	MS	F	p
Frequency (F)	75.92	1	75.92	24.26	<.001
Personal use (A) x F	2.04	1	2.04		
Information (B) x F	2.11	1	2.11		
Tolerance Amb. (C) x F	3.80	1	3.80		
ABF	0.18	1	0.18		
ACF	5.19	1	5.19	2.06	n.s
BCF	0.23	1	0.23		
ABCF	8.23	1	8.23	2.63	n.s
Freq. x Subj.w.groups	266.06	85	3.13		

Table 20.

Analysis of linear trend. Experiment 4 (least squares analysis)

Source of variation within subjects (linear)	SS	df	MS	F	p
Frequency (F)	75.92	1	75.92	23.50	<.001
Qual.variation (A) x F	6.30	1	6.30	1.95	n.s.
Information (B) x F	2.11	1	2.11		
Tolerance Amb. (C) x F	3.80	1	3.80	1.18	n.s.
ABF	0.00	1	0.00		
ACF	0.37	1	0.37		
BCF	0.23	1	0.23		
ABCF	0.68	1	0.68		
Freq. x Subj.w.groups	274.55	85	3.23		

Table 21.

Summary of analysis of variance. Frequency of chosen brand
Experiment 4 (least squares analysis)

Source of variation	SS	df	MS	F	p
Personal use (A)	0.29	1	0.29		
Information (B)	2.45	1	2.45	1.12	n.s.
Tolerance Amb. (C)	13.13	1	13.13	6.02	<.05
AB	0.52	1	0.52		
AC	13.69	1	13.69	6.28	<.05
BC	0.00	1	0.00		
ABC	0.00	1	0.00		
Within cell	183.34	84	2.18		

Table 22.

Summary of analysis of variance. Frequency of chosen brand,
Experiment 4 (least squares analysis)

Source of variation	SS	df	MS	F	p
Qual.variation (A)	1.84	1	1.84		
Information (B)	2.45	1	2.45	1.07	n.s.
Tolerance Amb. (C)	13.13	1	13.13	5.71	<.05
AB	1.08	1	1.08		
AC	0.85	1	0.85		
BC	0.00	1	0.00		
ABC	0.24	1	0.24		
Within cell	193.21	84	2.30		

Table 23 Experiment 5

Mean affect-scores per frequency-level and condition

Σ_T = Sum of scores transformed by coefficients of orthogonal polynomials (linear trend)

	Frequency-level							
Condition	0	1	3	6	9	12	Σ_T	n
1. Low Risk	3.69	3.50	4.06	4.13	4.00	4.19	4.06	16
2. Medium Risk	2.94	3.44	3.06	3.31	3.56	3.94	5.63	16
3. High Risk	3.19	3.44	4.00	3.44	3.88	3.13	0.44	16

See also Figures 10 and 11, p. 214.

Table 24.

Analysis of linear trend. Experiment 5

Source of variation within subjects (linear)	SS	df	MS	F	p
Frequency	7.81	1	7.81	2.94	<.10
Risk x Frequency	3.24	2	1.62	0.60	
Freq. x Subj.w.groups	119.86	45	2.66		

Table 25.

Summary of analysis of variance. Frequency of chosen brand, Experiment 5 (unweighted means analysis)

Source of variation	SS	df	MS	F	p
Risk	85.81	2	42.91	6.42	<.01
Within cell	293.93	44	6.68		

Table 26 Experiment 6

Mean affect-scores per frequency-level and condition
Σ_T= Sum of scores transformed by coefficients of orthogonal polynomials (linear trend)

Condition	Frequency-level 0	1	3	6	9	12	Σ_T	n
1. Low Risk I	2.94	3.94	4.25	4.50	4.25	3.88	5.88	16
2. Low Risk II	3.31	4.81	3.57	3.88	3.75	3.88	-0.06	16
3. No Risk	3.19	4.69	4.31	3.81	4.31	3.25	-1.31	16

See also Figures 12 and 13, p. 215.

Table 27.
Analysis of linear trend. Experiment 6

Source of variation within subjects (linear)	SS	df	MS	F	p
Frequency (F)	8.23	1	8.23	3.12	<.05
Choice (A) x F	12.43	1	12.43	4.70	<.05
Risk (B) x F	0.47	1	0.47		
ABF	0.01	1	0.01		
Freq. x Subj.w.groups	158.49	60	2.64		

Table 28.

Summary of analysis of variance. Frequency of chosen brand, Experiment 6 (unweighted means analysis)

Source of variation	SS	df	MS	F	p
Choice (A)	108.19	1	108.19	13.08	<.001
Risk (B)	0.19	1	0.19		
AB	39.81	1	39.81	4.81	<.05
Within cell	479.75	58	8.27		

Table 29.

Analyses of linear trend. Simple interaction effects (within subjects, linear) in condition-combinations, Experiment 6

Low Risk I	$F_{1,30}=0.10$		
Low Risk II	$F_{1,30}=2.76$	$F_{1.30}=1.55$	
No Risk	$F_{1,30}=2.83$	$F_{1,30}=2.02$	$F_{1,30}=0.06$
	Medium Risk	Low Risk I	Low Risk II

[$F_{.90}(1,30)=2.88$].

Table 30.

Comparison of condition-means. Freq. of chosen brand, Experiment 6

Low Risk I (mean: 1.38)	$t_{(30)}=2.01^{*}$		
Low Risk II mean: -1.00)	$t_{(30)}=4.92^{***}$	$t_{(39)}=2.05^{*}$	
No Risk (mean: 0.25)	$t_{(30)}=3.30^{**}$	$t_{(30)}=0.99$	$t_{(30)}=1.10$
	Medium Risk (mean: 3.25)	Low Risk I (mean: 1.38)	Low Risk II (mean:-1.00)

$^{*}p< .05$ $^{**}p< .01$ $^{***}p< .001$

Table 31 Experiments 5 and 6 combined

Mean affect-scores per frequency-level for relatively high and low tolerance of ambiguity.

Σ_T = Sum of scores transformed by coefficients of orthogonal polynomials (linear trend)

Tolerance/Intol. of Ambiguity	Frequency-level 0	1	3	6	9	12	Σ_T	n
< 28 (Tol.)	3.30	4.21	3.88	4.02	4.02	3.50	1.12	50
> 28 (Intol.)	2.88	3.69	3.88	3.77	3.54	4.58	7.89	26

See also Figures 14 and 15, p. 216.

Table 32.

Analysis of linear trend. Experiment 5 and 6 combined

No Risk and intermediate Risk (unweighted means analysis)

Source of variation within subjects (linear)	SS	df	MS	F	p
Frequency (F)	13.54	1	13.54	5.60	<.05
Risk (A) x F	9.45	1	9.45	3.90	<.10
Tolerance Amb. (B) x F	10.15	1	10.15	4.19	<.05
ABF	0.02	1	0.02		
Freq. x Subj.w.groups	174.31	72	2.42		

Table 33.

Summary of analysis of variance. Frequency of chosen brand, No Risk and intermediate Risk Experiments 5 and 6 combined (unweighted means analysis)

Source of variation	SS	df	MS	F	p
Risk	74.25	1	74.25	9.10	<.01
Tolerance Amb. (B)	81.15	1	81.15	9.94	<.01
AB	0.31	1	0.31		
Within cell	562.77	69	8.16		

Table 34 Experiment 7

Mean affect-scores per frequency-level and condition

Risk-instruction-after conditions

$\sum_T$ = Sum of scores transformed by coefficients of orthogonal polynomials (linear trend)

	Frequency-level							
Condition	0	1	3	6	9	12	$\sum_T$	n
1. No Risk'	4.15	3.92	4.31	4.31	4.08	4.31	1.23	13
2. Medium Risk'	3.23	3.85	3.77	4.23	4.26	4.54	8.23	13
3. High Risk'	3.92	3.54	3.50	4.28	3.31	3.92	0.08	13

See also Figures 16 and 17, p. 217.

Table 35.

Analysis of linear trend. Experiment 7

(unweighted means analysis)

Source of variation within subjects (linear)	SS	df	MS	F	p
Frequency (F)	7.23	1	7.23	3.32	<.10
Risk (A) x F	20.43	2	10.22	4.69	<.05
Place instr. (B) x F	0.69	1	0.69		
ABF	0.04	2	0.02		
Freq. x Subj.w.groups	176.91	81	2.18		

Table 37.

Means of individual conditions and factor-levels, Experiment 9

(1 is preference for exposed brand)

exp.frequency / attention \ risk	1 exposure $\bar{x}$=.85		7 exposures $\bar{x}$=.78	
	no risk	risk	no risk	risk
Elaborate attention $\bar{x}$ = .77	(1) $\bar{x}$ =.94	(2) $\bar{x}$ =.74	(3) $\bar{x}$ =.76	(4) $\bar{x}$ =.65
Limited attention $\bar{x}$ = .85	(5) $\bar{x}$ =.83	(6) $\bar{x}$ =.88	(7) $\bar{x}$ =.85	(8) $\bar{x}$ =.84

Mean no risk: .85; mean risk: .78; mean control-condition: .61

Table 38.

Summary of analysis of variance. Exposure-level chosen brand, Experiment 9 (unweighted means analysis)

Source of variation	SS	df	MS	F	p
Exposure (A)	0.192	1	0.192	1.23	n.s.
Risk (B)	0.173	1	0.173	1.11	n.s.
Attention (C)	0.231	1	0.231	1.48	n.s.
AB	0.019	1	0.019		
AC	0.154	1	0.154		
BC	0.327	1	0.327	2.09	n.s.
ABC	0.038	1	0.038		
Within cell	23.000	147	0.156		

Table 39.

Comparisons of the various factor-levels with the control-condition Experiment 9 (corrected for number of means)

Control-Condition ($\bar{x}$ = .61) versus

- elaborate attention ($\bar{x}$ = .77) : $\bar{z}$ = 1.63 n.s.
- limited attention ($\bar{x}$ = .85) : $\bar{z}$ = 2.62 $p<.05$
- risk ($\bar{x}$ = .78) : $\bar{z}$ = 1.62 n.s.
- no risk ($\bar{x}$ = .85) : $\bar{z}$ = 2.53 $p<.05$
- 1 exposure ($\bar{x}$ = .85) : $\bar{z}$ = 2.61 $p<.05$
- 7 exposures ($\bar{x}$ = .78) : $\bar{z}$ = 1.64 n.s.

1 = preference for exposed brand.

Table 40.

Means for factor-levels of Experiment 9, distinguishing between possible prior exposure and no prior exposure

	prior exposure	no prior exposure
- elaborate attention	.78	.76
- limited attention	.94	.79
- risk	.78	.80
- no risk	.93	.76
- 1 exposure	.87	.84
- 7 exposures	.84	.71

1 = preference for exposed brand

Table 41.

Summary of analysis of variance.
Preference for chosen brand Experiment 9

Source of variation	SS	df	MS	F	p
Prior exposure (A)	.247	1	.247	1.55	n.s.
Attention (B)	.247	1	.247	1.55	n.s.
Exposures (C)	.330	1	.330	2.08	n.s.
Risk (D)	.247	1	.247	1.55	n.s.
AB	.165	1	.165	1.04	n.s.
AC	.165	1	.165	1.04	n.s.
AD	.082	1	.082		
BC	.247	1	.247	1.55	n.s.
BD	.165	1	.165	1.04	n.s.
CD	.000	1	.000		
ABC	.000	1	.000		
ABD	.165	1	.165	1.04	
ACD	.000	1	.000		
BCD	.000	1	.000		
ABCD	.082	1	.082		
Within cell	22.110	139	.159		

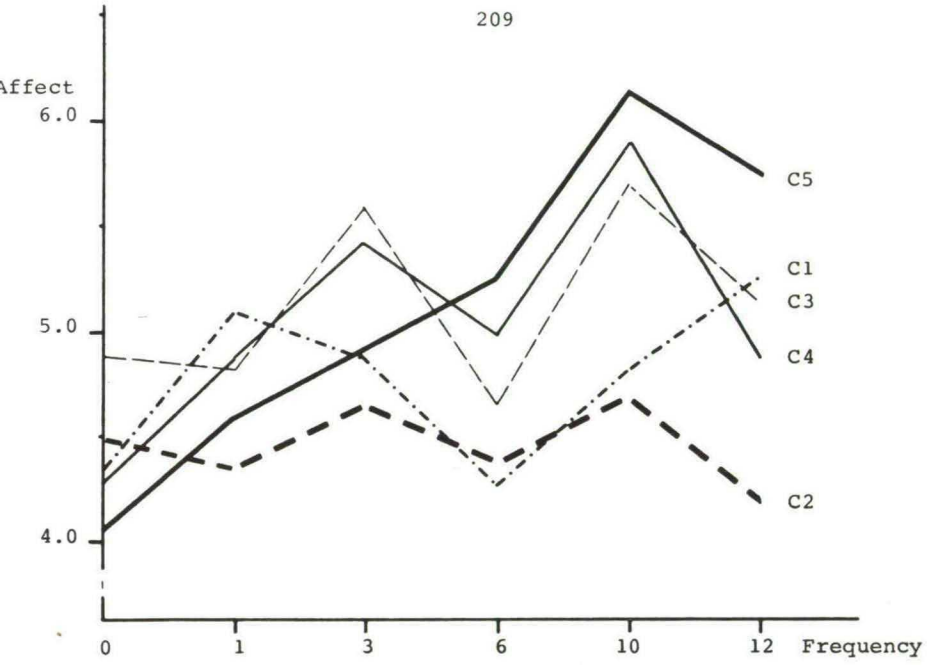

Figure 1: Mean affect-scores per frequency-level per condition (C) of Experiment 1.

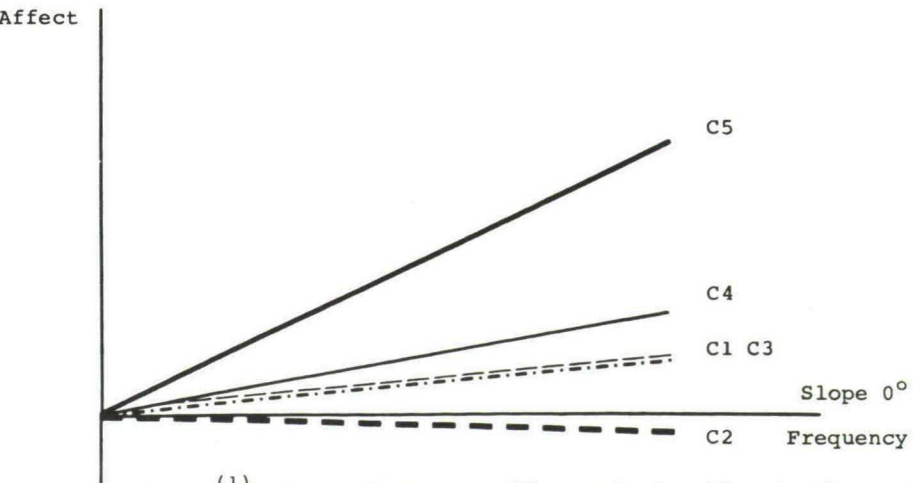

Figure 2: Slopes[1] of the frequency-affect relationships in the conditions (C's) of Experiment 1. (Mean 10% highest trendscores = 32 = 60°).

[1] The linear trend analysis produces trendscores per individual. The mean of the 10% highest trendscores per experiment is set at 60°. Both the 10% and 60° are arbitrary numbers, taken out of convenience. By consequence, the depicted slopes should be interpreted in a relative sense only.

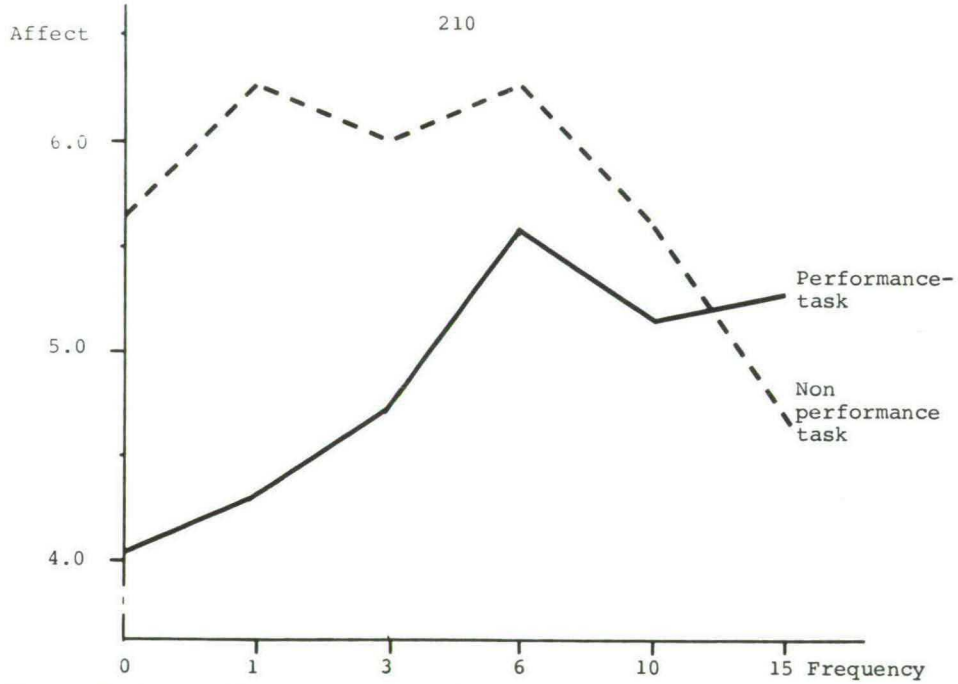

Figure 3: Mean affect scores per frequency-level per condition of Experiment 2.

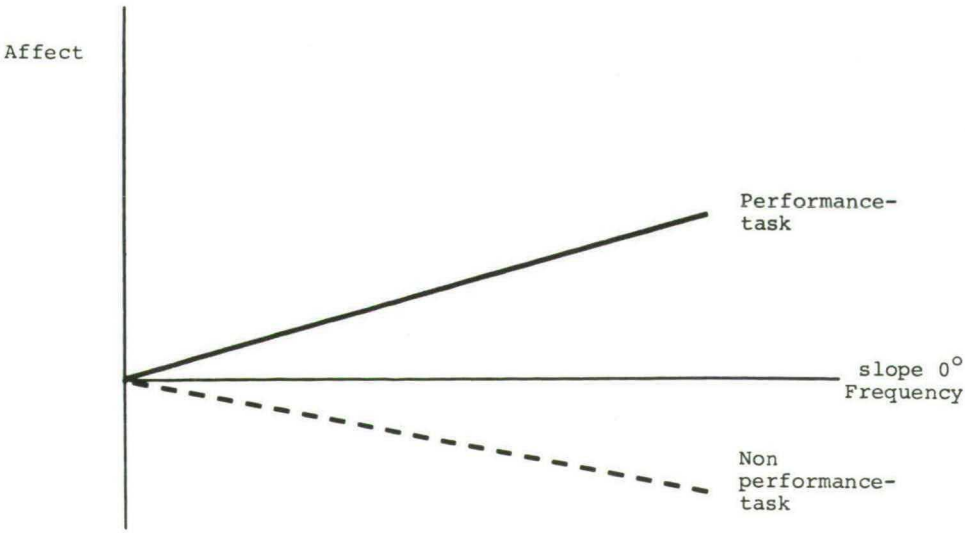

Figure 4: Slopes of the frequency-affect relationships in the conditions of Experiment 2. (Mean 10% highest trendscores = 35 = 60°) (See footnote p. 209).

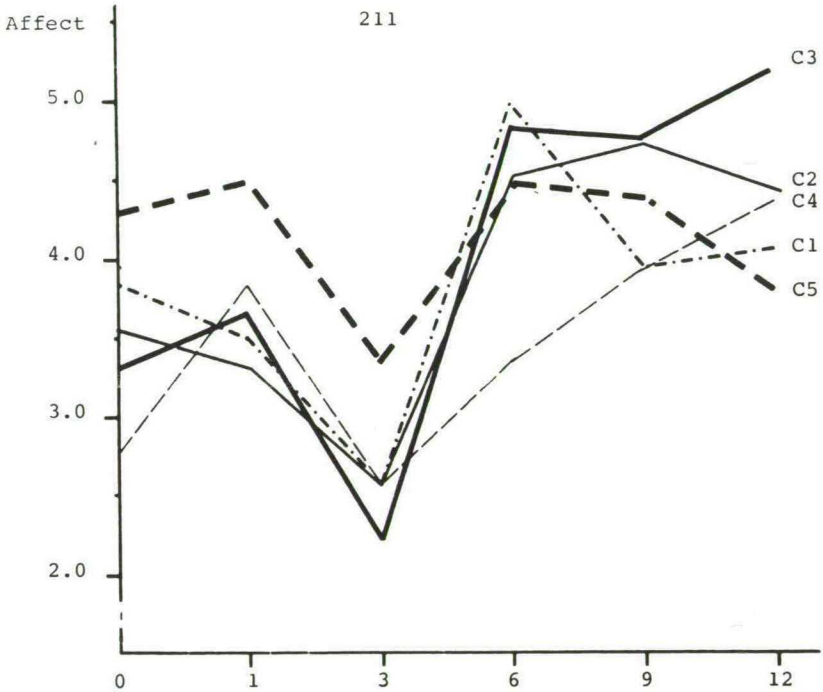

Figure 5: Mean affect scores per frequency-level per condition (C) of Experiment 3.

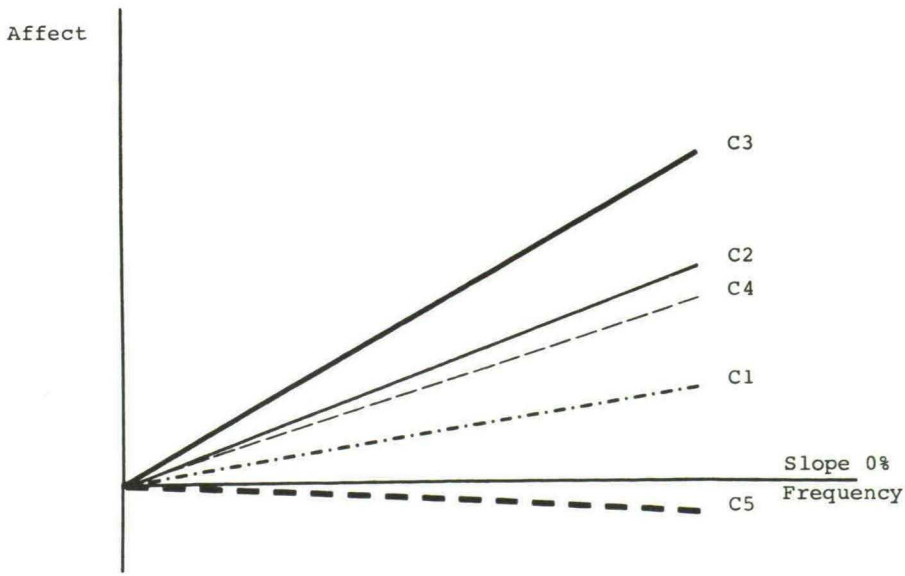

Figure 6: Slopes of the frequency-affect relationships in the conditions (C's) of Experiment 3. (Mean 10% highest trendscores = 31 = 60°) (See footnote p.209).

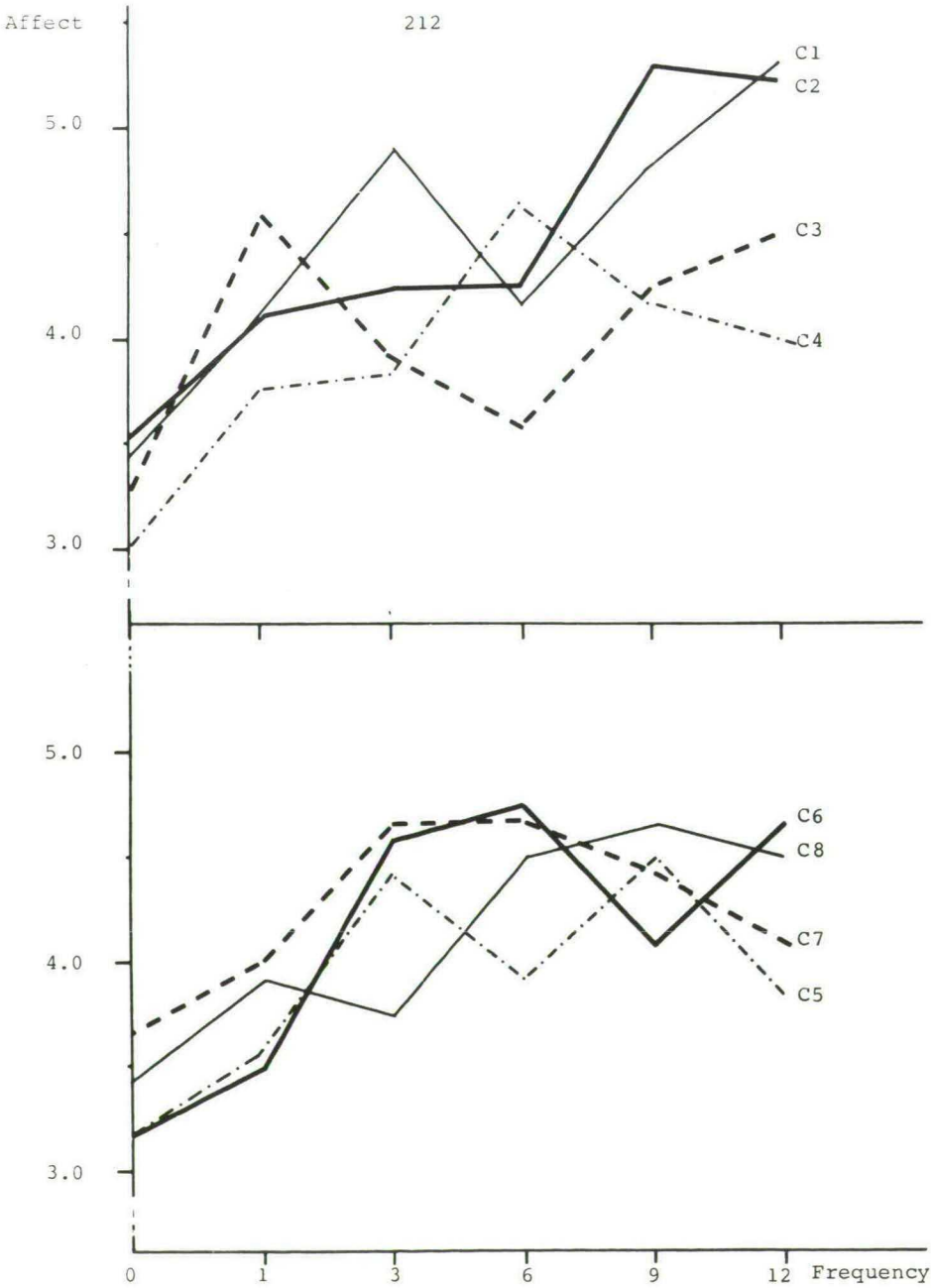

Figure 7: Mean affect-scores per frequency-level per condition (C) of Experiment 4. Conditions 1-4: top; conditions 5-8: bottom.

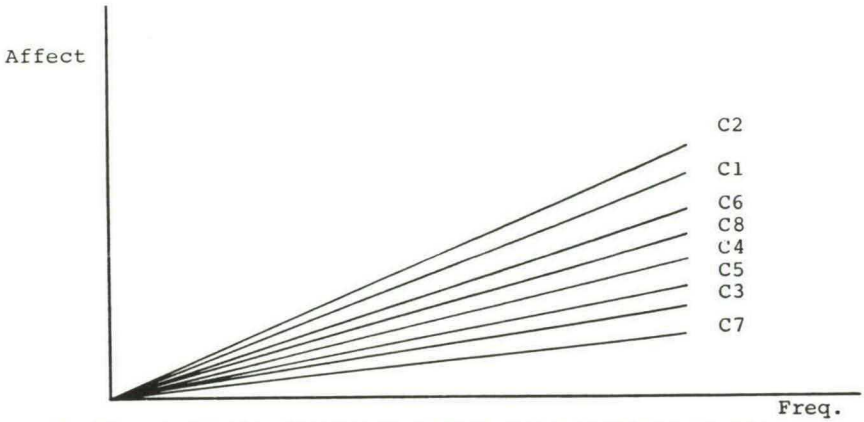

Figure 8: Slopes of the frequency-affect relationships in the conditions (C's) of Experiment 4. (Mean 10% highest trendscores = 31 = 60°)(See footnote p. 209).

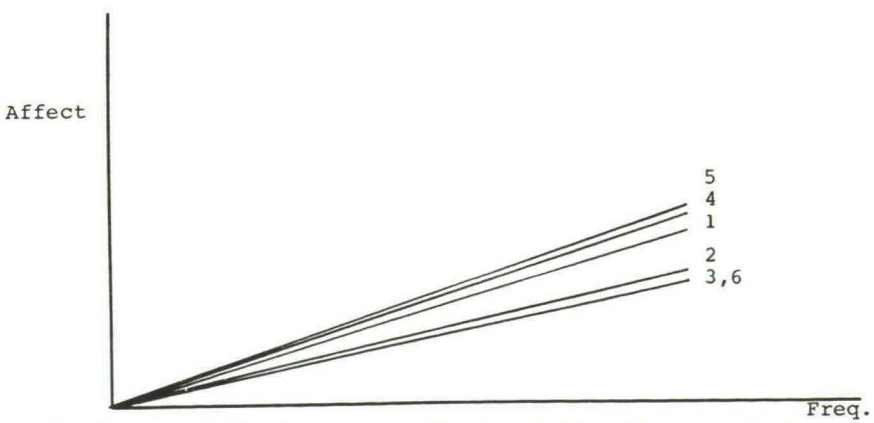

Figure 9: Slopes of the frequency-affect relationships per factor-level of Experiment 4. 1 = Personal use, 2 = No personal use, 3 = Information, 4 = No information, 5 = Quality variation, 6 = No qualtity variation. (Mean 10% highest trendscores = 31 = 60°)(See footnote p.

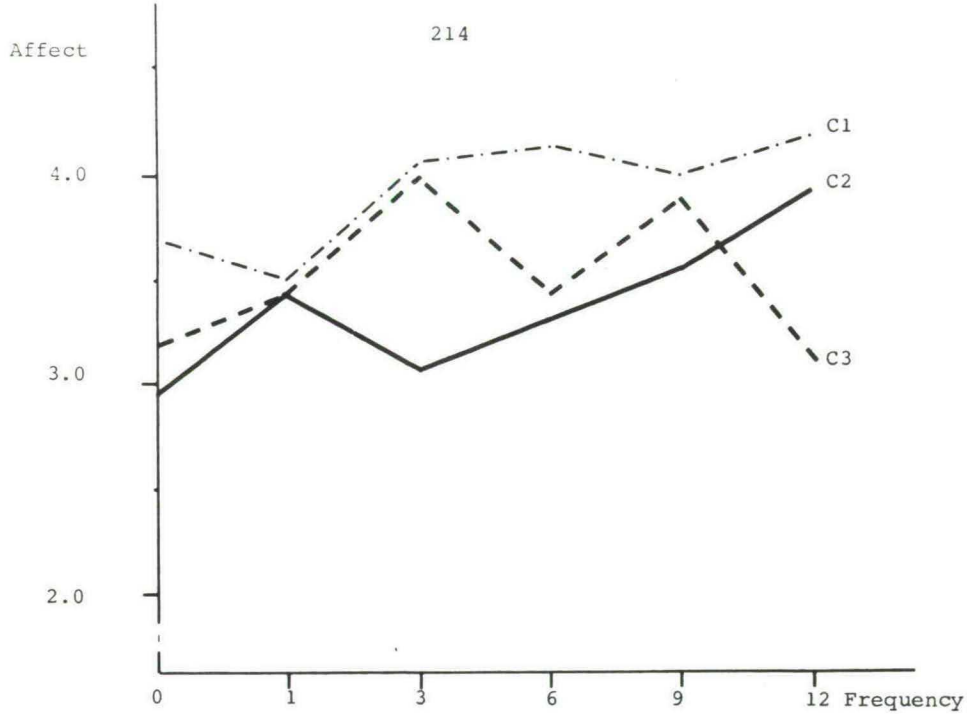

Figure 10: Mean affect-scores per frequency-level per condition (C) of Experiment 5.

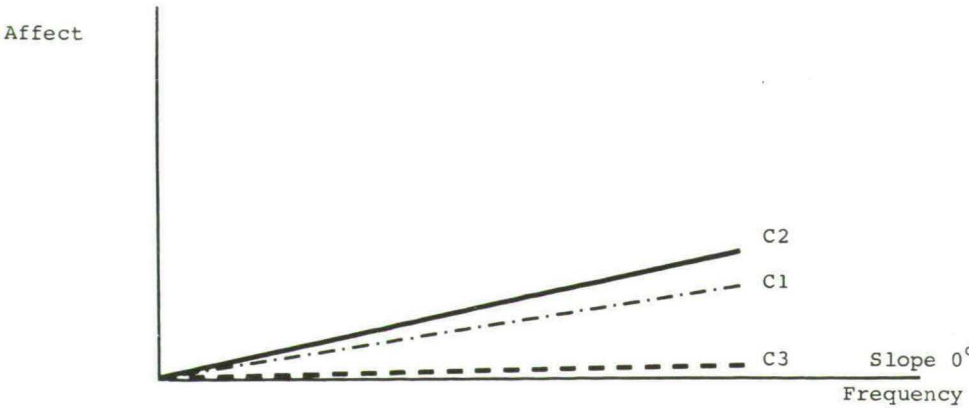

Figure 11: Slopes of the frequency-affect relationships in the conditions (C's) of Experiment 5. (Mean 10% highest trendscores = 27 = 60°)(See footnote p. 209).

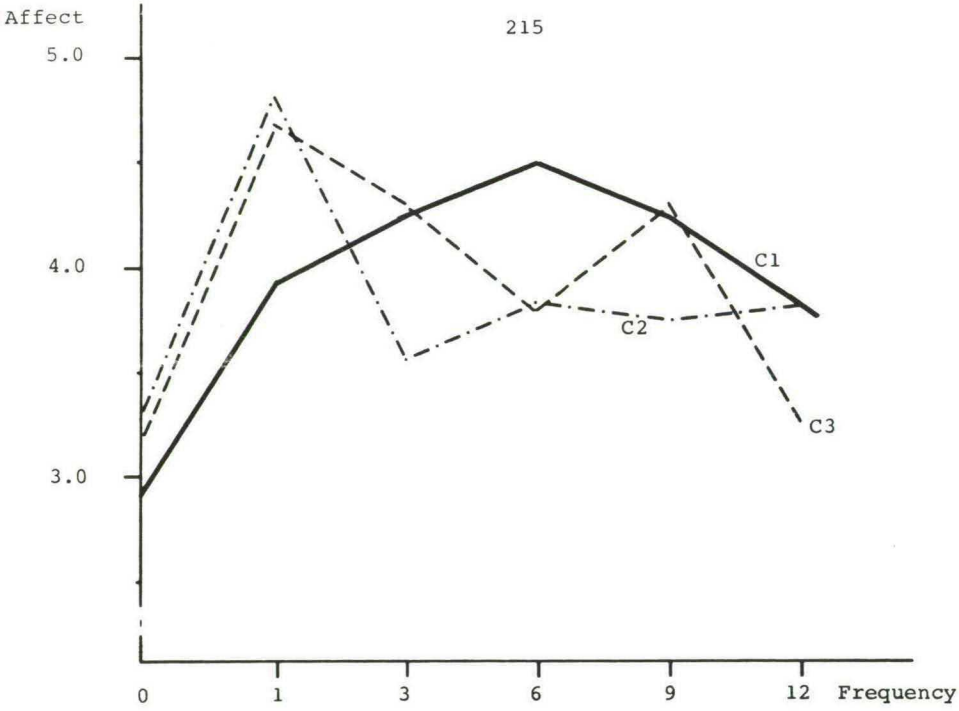

Figure 12: Mean affect-scores per frequency-level per condition (C) of Experiment 6.

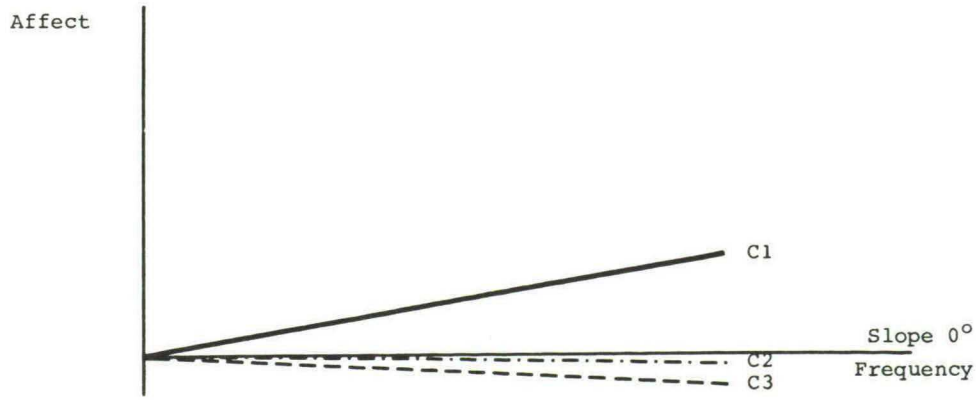

Figure 13: Slopes of the frequency-affect relationships in the conditions (C's) of Experiment 6. (Mean 10% highest trendscores = 37 = 60°) (See footnote p. 209).

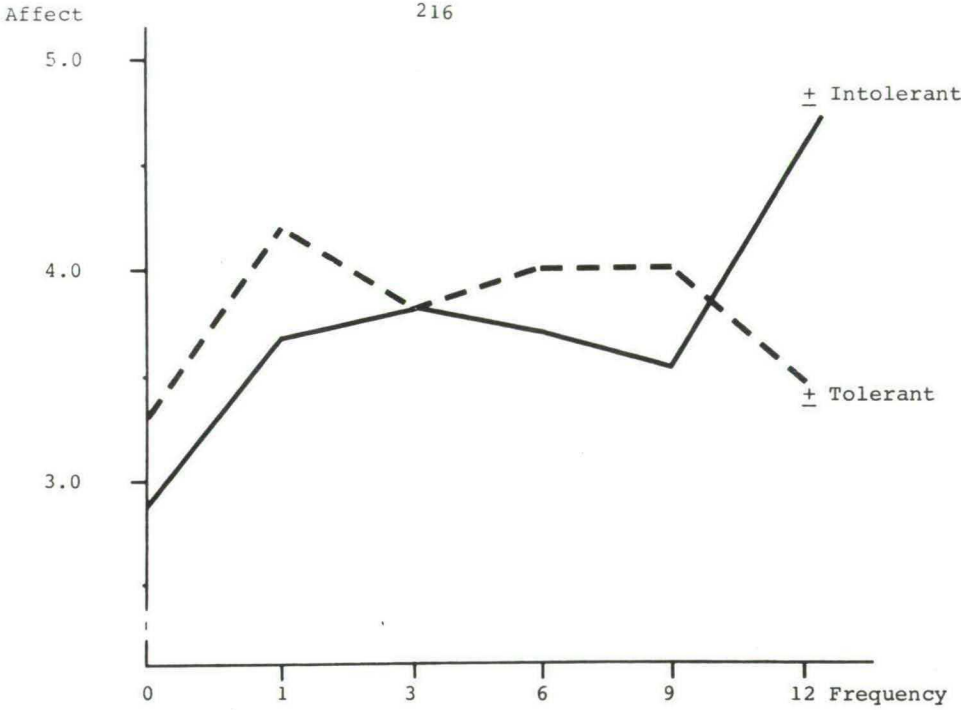

Figure 14: Mean affect-scores per frequency-level for relatively high and low tolerance of ambiguity. Experiment 5 and 6 combined.

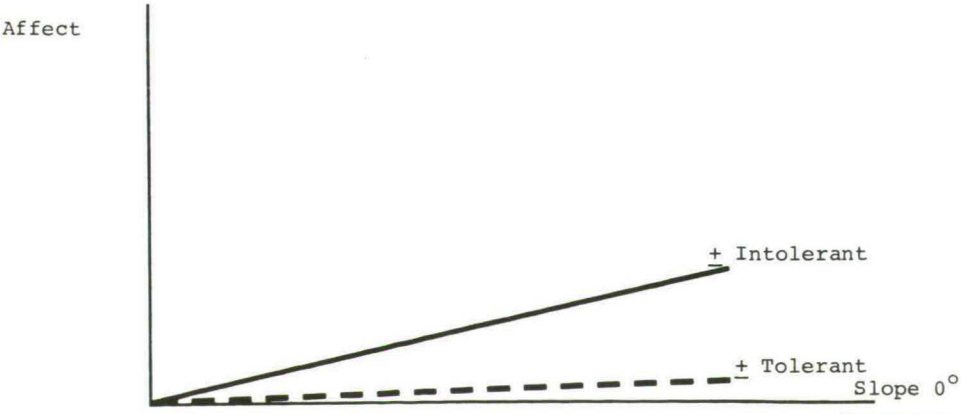

Figure 15: Slopes of the frequency-affect relationships for relatively high and low tolerance of ambiguity. Experiments 5 and 6 combined. (Mean 10% highest trendscores = 37 = 60°) (See footnote p. 209).

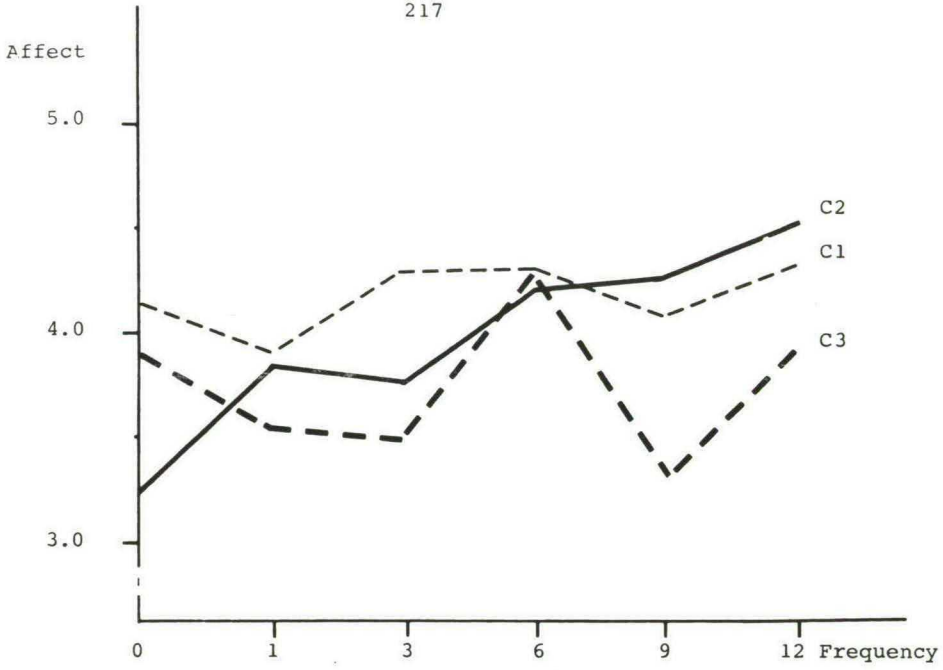

Figure 16: Mean affect-scores per frequency-level per condition (C) of Experiment 7.

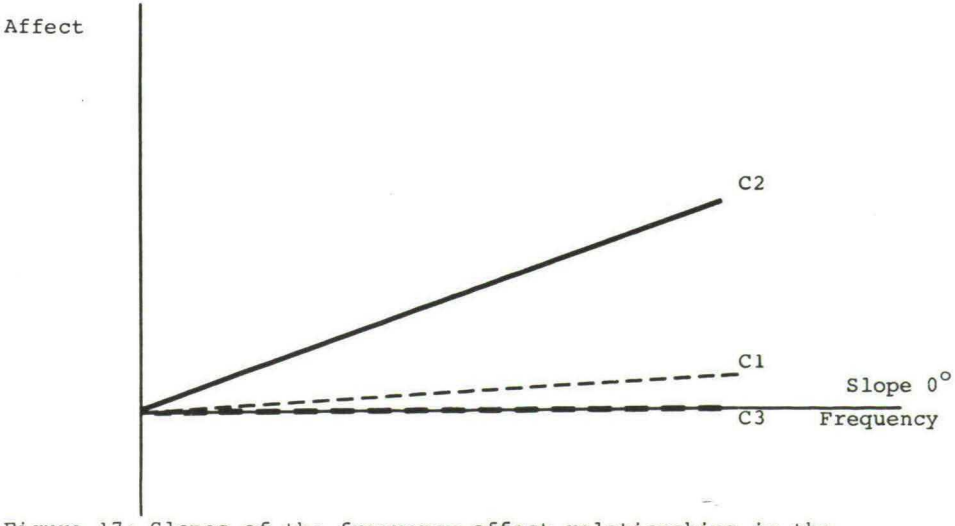

Figure 17: Slopes of the frequency-affect relationships in the conditions (C's) of Experiment 7. (Mean 10% highest trendscores = 25 = 60°)(See footnote p. 209).

STELLINGEN

1. Er is geen onvoorwaardelijk autonoom effect van de frequentie van blootstelling aan een stimulus op affectieve gevoelens ten opzichte van die stimulus.

2. De theoretische discussie rond de volgorde van cognitieve en affectieve gedragscomponenten is in essentie een confrontatie van onduidelijke conceptualisaties van cognitie en van affect.

3. Als in een experimentele situatie een conventionele manipulatie van de aanbiedingsfrequentie van nonsense woorden niet voorafgegaan wordt door taakinstructies, dan is de gemiddelde frequentie-affectrelatie bij kinderen van ongeveer 14 jaar oud meer positief dan bij kinderen van ongeveer 10 jaar oud. Deze bevinding is verklaarbaar vanuit de "functional exposure" interpretatie.

4. a. De Economische Psychologie maakt veelvuldig gebruik van concepten en theorieën afkomstig uit andere subdisciplines van de psychologie.
   b. Het is onjuist de Economische Psychologie als een louter toegepaste psychologie te betitelen.
   c. a en b zijn niet in tegenspraak met elkaar.

5. De individuele welvaartsfunctie van het inkomen (WFI) wordt vastgesteld op basis van de inkomensniveaus die een persoon verbindt aan evaluatieve aanduidingen, variërend van "zeer slecht" tot "zeer goed". Na transformatie van de evaluatieschaal in een numerieke schaal kan het verband tussen de variabelen inkomenshoogte en inkomensevaluatie worden beschreven door een lognormale verdelingsfunctie met de parameters μ en σ (zie bijvoorbeeld Van Praag, 1971).
   Empirische evidentie suggereert dat het toekennen van inkomensniveaus aan evaluatieve aanduidingen door respondenten, zoals dat plaatsvindt ter bepaling van de WFI, dikwijls problematisch is, hetgeen vragen doet rijzen met betrekking tot de juistheid van de parameters die deze functie beschrijven. Bovendien moet worden opgemerkt dat de observatie van de te verwachten lognormale, S-vormige, verdelingsfunctie op zich geen validiteitsgarantie biedt. Op grond van beide argumenten verdient het aanbeveling om in empirisch onderzoek nader aandacht te schenken aan de mogelijke discrepantie tussen de berekende welvaartsfunctie van het inkomen enerzijds en de werkelijke evaluatie van verschillende inkomensniveaus anderzijds.

   (Van Praag, B. M. S. The welfare function of income in Belgium: An empirical investigation. European Economic Review, 1971, 2, 337-369.)

6. Als in een vragenlijst gevraagd wordt het bedrag aan te geven dat men denkt maximaal te kunnen bezuinigen, dan is het verkregen bedrag, gemiddeld over respondenten, significant lager dan het met behulp van gegevens verkregen met dezelfde vragenlijst berekende gemiddelde verschil tussen het huidige inkomen en het inkomen dat men minimaal acht, gelet op de eigen omstandigheden. Dit suggereert dat de vraag naar wat men denkt maximaal te kunnen bezuinigen opgevat wordt als een vraag naar wat men maximaal bereid is te bezuinigen.

7. Een definitie van misleidende reclame die gebaseerd is op de interactie tussen kenmerken van een reclameboodschap enerzijds en consumentengedragsaspecten anderzijds is te prefereren boven een definitie die slechts gebaseerd is op het verschil tussen de feitelijke eigenschappen van een product of dienst en de daarop betrekking hebbende inhoud van een reclameboodschap.

8. Het nut van de voedingswaardewijzer als hulpmiddel bij consumptieve beslissingen wordt gewoonlijk overschat.

9. Abortus provocatus, indien verricht omdat de ouder(s) de kosten in termen van geld, tijd en/of moeite verbonden aan het krijgen en verzorgen van een kind niet wenst (wensen) te accepteren, is te beschouwen als een variant op de door Jonathan Swift in "A modest proposal" (1729) op ironische wijze voorgestelde maatregel.

   (Swift, J. (1729) A modest proposal - for preventing the children of poor people from being a burthen to their parents or country, and for making them beneficial to the public. In: Van Doren, C. (ed.) The portable Swift. New York, The Viking Press, 1974, 549-559.)

10. Bij het opgeven van zijn adres zal een bewoner van de Aa of Weerijs (wijk De Blaak in Tilburg) deze straatnaam gewoonlijk noemen, spellen en nogmaals noemen.
    Degenen die trachten het adres te vernemen lijken daarbij achtereenvolgens te twijfelen aan diens spraakvermogen, integriteit en besluitvaardigheid.

(Stellingen behorende bij Th. B. C. Poiesz: The relationship between exposure frequency and consumer affect; toward a functional interpretation. Katholieke Hogeschool Tilburg, oktober 1983)